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UNITED STATES DEPARTMENT OF AGRICULTURE

DEPARTMENT BULLETIN No. 1266

Washington, D. C. August 22, 1924

# AGRICULTURAL COOPERATION IN DENMARK

By

CHRIS L. CHRISTENSEN, Agricultural Economist
Bureau of Agricultural Economics

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WASHINGTON
GOVERNMENT PRINTING OFFICE
1924

**Yearly average exchange rates on Danish krone.**

1914–1919, Copenhagen on New York; 1920–1922, New York on Copenhagen.

| Calendar year: | Cents per krone (26.8=par). |
|---|---|
| 1914 | 26.34 |
| 1915 | 25.46 |
| 1916 | 27.78 |
| 1917 | 29.53 |
| 1918 | 30.00 |
| 1919 | 23.01 |
| 1920 | 15.63 |
| 1921 | 17.78 |
| 1922 | 20.93 |

| Danish fiscal year ended May 31:[1] | Cents per krone. |
|---|---|
| 1915–16 | 26.8738 |
| 1916–17 | 27.6856 |
| 1917–18 | 30.8534 |
| 1918–19 | 27.6511 |
| 1919–20 | 19.6028 |
| 1920–21 | 16.0754 |
| 1921–22 | 19.0143 |
| 1922–23 | 20.2080 |

[1] Calculated from the same monthly averages as for calendar years.

Source: Federal Reserve Board Bulletins, quoting Statistisk Aarbog, July, 1914, to December, 1919, and their own monthly averages since January, 1920. Quotations at New York on Copenhagen are not available throughout the period, but the shift in sources does not result in any material discrepancy. For the calendar year 1920 the Copenhagen quotations averaged 15.43 cents per krone, while the New York quotations averaged 15.63 cents. For the months, January to June, 1914, exchange is calculated as at par or 26.8 cents as equal to 1 krone.

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## INTRODUCTION.

Forty years of sound agricultural planning and progress have revolutionized the economic and social life of the Danish people. From a depressed state of peasant agriculture, which threatened the welfare and prosperity of the whole nation, Denmark (fig. 1) stands to-day as the world's foremost agricultural country in the scientific organization of her production and marketing. Her people, rural as well as urban, appear contented and prosperous. (See fig. 2.) Neither extreme wealth nor extreme poverty exists.

The farmers are now owners of the tracts of land they cultivate. They rank foremost among the nations in the application of scientific methods in agriculture, use of fertilizers, and relative crop production. Their intensive development of animal industry stands highest. Their extensive application of democratic cooperative principles has made Denmark famous the world over.

As a measure of the importance of Danish agriculture to consumers of other countries to-day, it was well known before the war that Danish agriculture furnished 27.9 per cent (1913) of the international butter trade. Besides supplying 40 to 50 per cent of the total butter, bacon, and egg imports to the United Kingdom, Denmark has a relatively large surplus of cattle (meats), horses, and seeds for other countries.

The first real step in the direction of agricultural cooperation was taken in the eighties, although the modern cooperative movement began in Denmark with the formation of the credit associations in the

fifties, and the cooperative consumers' stores in 1866. It was a marketing problem which prompted the Danish peasants to form the first creamery in 1882, and a bacon factory (hog-slaughtering and bacon-curing plant) in 1887, on a cooperative basis, both designed to facilitate the standardization and efficient distribution of Denmark's two most important agricultural products. With the first cooperative association founded on practical economic principles, the movement gradually spread into every community until it embraced every

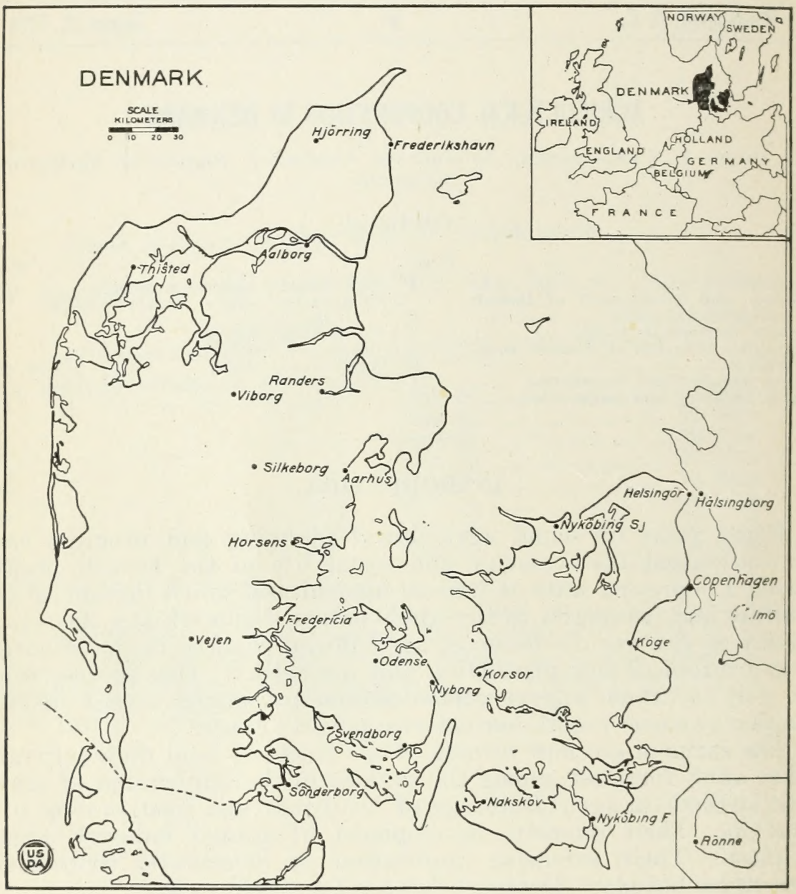


FIG. 1.—Denmark, lying between the North Sea and the Baltic, comprises an area of 16,608 square miles, or one-fifth the size of Minnesota. The population density is 196.7 persons per square mile, or five and one-half times that of the United States.

phase of Danish agriculture and became the dominant factor in the progress and prosperity of the whole nation.

To-day the Danish farmers face the modern world markets as one collective body of sellers, rather than as 205,000 individual farmers. Production takes place on individual farm-holdings, but the Danish farmers meet the demands of the markets through collective effort—group distribution—organized on a cooperative basis. Their organization presents two types: (1) The agricultural societies

(*Landboforeninger* and *Husmandsforeninger*), which promote the technical, scientific, and educational interests of agriculture and enroll approximately 90 per cent of the Danish farmers; (2) the cooperative associations, which deal more particularly with the business of marketing agricultural products, purchasing farm supplies, and providing agricultural credit. More than 85 per cent of the farmers are members of cooperative creamery and bacon-factory associations.

The number of cooperative associations has increased from 250 in 1885 to over 5,000 in 1920. The volume of business handled during the same period has grown from 10,000,000 kroner to nearly 1,500,000,000 kroner. (See fig. 3.) Since 1900, when the numerical growth of the associations reached its present limits, the average volume of business done by each association has continually increased.

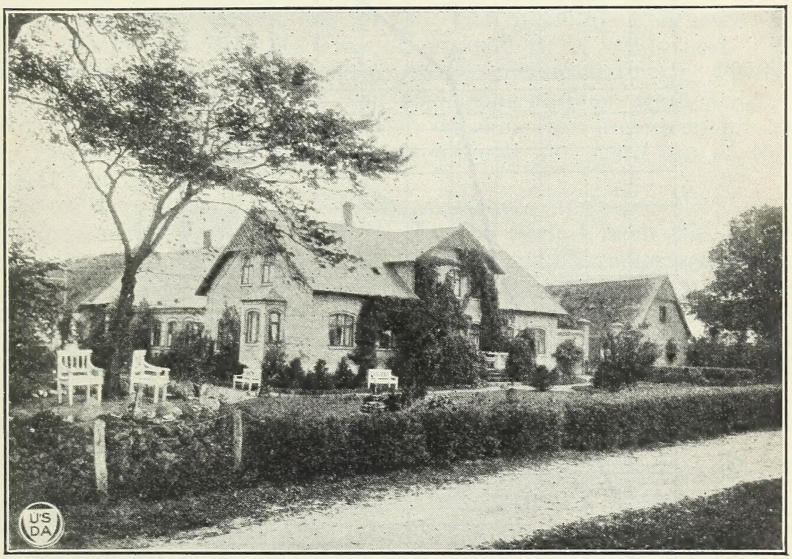


FIG. 2.—A farm home in rural Denmark.

Space does not permit in the following pages an adequate statement of the peaceful economic and social adjustments, which have had such an important part in preserving the independence of the Danish peasants and raising to a high level their economic and intellectual life. A study of the land reforms and policy of Denmark is an integral part of a study of her agricultural development. So, too, is a study of her schools—her people's colleges and agricultural schools in particular—essential to an understanding of the rapidity and extensiveness of the growth of her agricultural efficiency and cooperative organization. Attention is called to these factors, but the main purpose of this bulletin is to present, as accurately as possible, the results of a thorough, first-hand study and investigation of the whole field of agricultural cooperation in Denmark—its history, development, and form of organization, and its bearing upon the nation's agricultural progress.

## HISTORY AND DEVELOPMENT OF DANISH AGRICULTURE.

Denmark has been an agricultural country since its early history. Hers is an old civilization whose people have wrestled with the soil

**Agricultural Cooperation in Denmark—Number of Associations and Volume of Business, 1866–1920.**

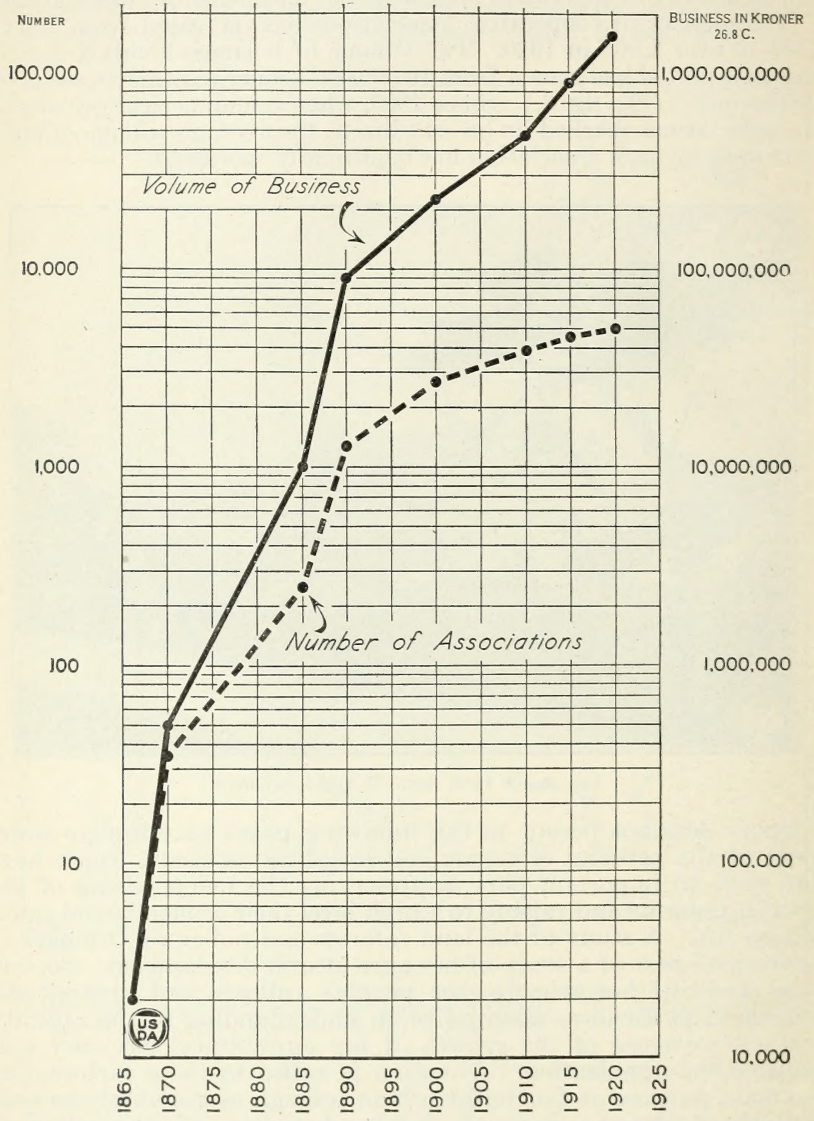


FIG. 3.—This chart does not include the Danish Cooperative Bank, whose volume of business was 10,500,000,000 kroner in 1920.

for centuries. Even in the Viking period the "Wild Dane" was a farmer. Industrial developments have been restricted by absence of coal, iron, and other natural mineral resources. The great forests

that once covered most of the surface of the country have gone, but the soils remain, and these flat lowlands rising only slightly above the sea lend themselves to certain types of agriculture.

The Jutland Peninsula and the group of islands which form Denmark comprise an area of 16,608 square miles,[1] an area equivalent to one-third that of New York State or about one-fifth that of Nebraska. Denmark occupies a geographical position north of 54½° north latitude. Lying between the North Sea and the Baltic, this small northerly country is favored with an islandic climate, comparatively mild in winter and cool in summer with little, if any, extreme changes in temperature. The annual rainfall is approximately 25 inches[2] and occurs in seasons favorable to agricultural production.

The soils of Denmark do not compare in richness with the fertile agricultural centers of the United States. The greater part of the islands and the eastern section of the Jutland Peninsula are fairly fertile, but other sections have much light sandy soil. The productivity of the soil has been greatly increased during the last 50 years by scientific culture and treatment and by application of barnyard manures. In the last two decades this improvement has been further accelerated by the tremendously increased use of commercial fertilizers.

The old type of agriculture in Denmark was similar to that which existed in other European countries. The period from the middle ages to the close of the eighteenth century was characterized by the menace of increasing leaseholdership and concentration of smaller farms into the hands of large estate owners. With this transition came the develpment of villenage (*Vornedskab*), a system of land tenure which intensified the control which the landowner might exercise over his tenants. Not only was the tenant tied to the farm, but his children were compelled to work the land belonging to the large landowners.

Villenage was abolished in 1702, but the oppression of the peasant class was continued by a strict enforcement of feudal bondage (*Stavnbaand*) enacted in 1733, a form of compulsory military service which gave the large landlords the power to recruit their farm laborers from the peasant class. This growing oppression, which handicapped agricultural as well as national progress, prompted the emancipation of the peasants. With bondage abolished in 1788, the peasants were no longer bound to the large estate owners.

Under the feudal tenure system the Danish peasants were grouped in village communities (*Landbye*). The arable land was cut into long, narrow strips, a large number of such strips belonging to each peasant in the village. Cultivation of these strips in common was practiced. The new agricultural reform, which marked the close of the eighteenth century, abolished the farming of the ground in common. The land was parceled out into units of family-size farms, and the peasants moved out of the village to live on their own tracts. It is generally acknowledged by authorities that there is no country in continental Europe where the parceling out and moving onto the land has been carried out more completely than in Denmark.

[1] These figures include northern Slesvig, which was returned to Denmark in 1920.
[2] A Short Survey of the Danish Agriculture, published by the Royal Danish Agricultural Society, 1913, p. 6.

During this agricultural reform period the Danish Government initiated its policy of encouraging farm laborers to become independent owners of small holdings of sufficient area to provide for the home and a few acres for cultivation and livestock. This was the beginning of the modern small-holders (*Husmand*) movement in Denmark.

Grain production was the chief aim in the system of agriculture practiced in Denmark until the middle of the nineteenth century. The main source of ready cash for the farmer was the selling of grain, which was exported chiefly to the large cities in Germany and to other continental European countries. Meat production and the marketing of cattle for meat on foot to Germany and Holland was also carried on to some extent. Especially was this practiced on the peninsula of Jutland.

By the middle of the nineteenth century low grain prices combined with loss of soil fertility had brought this system of agriculture into

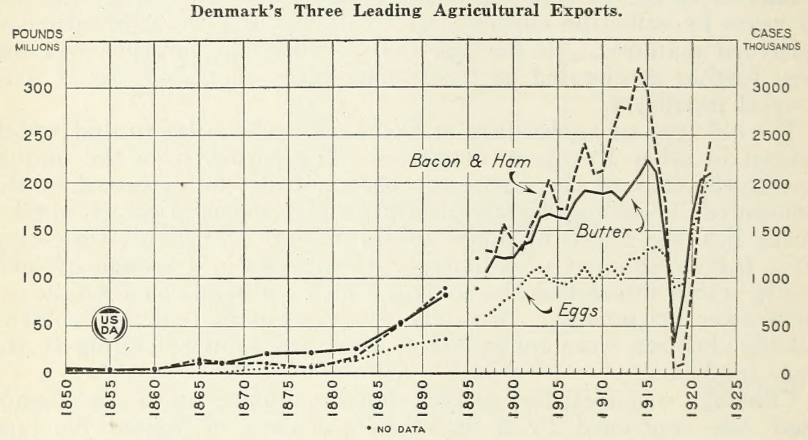


FIG. 4.—In the seventies and eighties the Danish farmers abandoned grain production for export of animal food products. War years affected by war conditions. (Eggs given in cases—360 eggs per case.) Data gathered through Denmark's Statistiske Department.

serious straits. It was evident there must be some change, and the Danes began to realize that the price of agricultural products was an important factor affecting their rural economy. Price statistics available for the previous 100 years showed that the price for animal products had increased with greater rapidity than that for grains. In fact, Danish statistics gathered from 1750 to 1913 on the prices of farm products [3] show that the price of butter and pork has increased four times, while the price of grains increased only twice during this same period of 163 years.

While this was undoubtedly the underlying economic factor which directed the change from grain to animal production, the stimulus which hastened this change in the sixties and seventies was largely furnished by three important factors: (1) The German and Danish wars of 1848–1850 and 1864 affected trade relations, in that the Danes

[3] Hansen, V. Falbe, Stavnsbaands-Losningen og Landboreformerne 1ste Del. pp. 1 and 83–2den Del. pp. 18 and 46. 1888–89.
Larsen, O. H., Landbrugets Historie og Statistik, 1921, pp. 92, 103, 139, 205, 230.

turned to England for their new market; (2) the perfection of modern transportation both on land and water flooded European markets with cheap grains from the fertile agricultural regions in the new parts of the world; and (3) the need of improving the soil fertility was early recognized by the Danish farmers and this alone presented an urgent appeal to turn to livestock.

As a result, Denmark gradually changed from a surplus grain-exporting to a grain-importing country. From a small beginning in about 1880, the importation of feeding stuffs in 1913 amounted to more than 3,000,000,000 pounds of oil cakes, bran, maize, and other grains for feeding purposes. Her home production was increased about 85 per cent from 1880 to 1914,[4] but the grain production supplied only 60 per cent of her annual consumption in pre-war years.

The three leading agricultural export products—butter, bacon, and eggs (fig. 4)—are consumed chiefly in Great Britain. Ranking next in order, the comparatively large surplus of cattle, meats, and horses in pre-war years found their chief outlet in Germany. The Danish seed industry also supplies a large surplus of field and garden seeds which are exported to many countries, including large quantities each year to the United States.

The development of the agricultural industry of Denmark is shown by the fact that the value of her exported agricultural products now constitutes approximately nine-tenths of the value of her total exports.

Her geographical situation between the densely populated industrial countries, Great Britain and Germany, was an important factor in this development. Both of these countries furnish large modern markets where finished agricultural foodstuffs are in great demand.

## DANISH AGRICULTURE TO-DAY.

Danish agriculture is characterized by a uniform system of farming practiced throughout the country. The plan of crop production is uniform, with the exception of a few sections where, on some farms, seed production, sugar-beet growing, or horse raising is a specialty, and on practically all Danish farms the primary aim in the management of the individual farm is to keep dairy cows, grow the bacon type of hogs, and raise chickens.

In the development of the new Danish agriculture, dairying plays the leading part, and the primary aim in Danish land utilization is the growing of forage, roots, and grain crops for feeding purposes. A surplus of grain for sale occurs only on a few large estate farms.

Seventy-eight per cent of the total area of Denmark[5] is in agricultural land. About 7 per cent of the total area is forest, including the extensive areas of heath in Jutland which have been planted with French mountain firs and red spruce during the last 60 years. Denmark's forest areas have nearly doubled since 1860. Over 1,500,000 acres of waste lands, heath, and moorlands have been reclaimed and converted into forests and farm lands.

About 66 per cent of the total land area is under actual cultivation. According to an official statistical survey in 1919,[6] 37.2 per cent of the total cultivated area was utilized for growing grain;

[4] Larsen, O. H., Landbrugets Historie og Statistik, 1921, p. 299.
[5] Denmark's Statistiske Department, Statistisk Aarbog, 1922.
[6] Statistisk Aarbog, 1922, p. 43.

grass and soiling crops, 40.7 per cent; root crops, including potatoes, 13.6 per cent; fallow area, 4.4 per cent; other crops, 1.3 per cent; and 2.8 per cent was occupied by gardens and farm buildings.

Denmark is now a country of middle-sized and small farms. Her large estate farms are continually decreasing in number, while the small farms are increasing. According to the recent official survey [7] there are 205,925 farms in Denmark each comprising an area over 1.36 acres. There are only 1,335 farms with an acreage of 296 acres and over, and their aggregate acreage makes up only 9.7 per cent of the agricultural land area in the whole country. A large farm within this group is commonly referred to as an estate farm (*Herregaard*). Then there is another group of 4,039 large farms (*Proprietærgaarde*) where the acreage ranges between 148 and 296 acres.

FIG. 5.—A modern Danish farmstead.

The farmers operating the middle-size farms, however, dominate the land area in Denmark to-day; 66 per cent of the total agricultural land area is found in 91,410 (or 44.5 per cent of the total number of farms) middle-size farms (*Böndergaarde*), ranging in size from 24.7 to 148 acres. The bulk of these farms have an acreage around 50 to 60 acres. (See fig. 5.) Many of the farmers on these middle-size farms are direct descendants from the old peasant stock.

There are 109,145 small-farm holdings, ranging in size from 1.36 to 24.7 acres. While this group comprises 52.9 per cent of the total number of farms, their aggregate land area amounts to only 13.6

[7] Statistiske Meddeleser Arealets Benyttelse i Danmark July 15, 1919. 4 Räkke 61 Bind 2 Häfte. Published by Danmark's Statistiske Departement in 1921, with additions and corrections to include data of similar survey in North Slesvig in 1920.

per cent of the total agricultural land area in Denmark. Although the bulk of this group is commonly dealt with and referred to by the Danes as in small-holdings ownership (*Husmandsbrug*), 15,000 to 20,000 of these farms comprise areas between 20 and 25 acres and should really be classified with the group of middle-size farms.

The small holder (*Husmand*) is a farmer living on a small tract of land, varying from 8 to 18 acres, where he is able to maintain an independent living for his family, with his cows, pigs, and chickens, and the growing of feeding crops. The small holder with only a few acres usually plans to work part time on the larger farms in the neighborhood, which adds to his income and provides the larger farms with first-class farm labor. The trend during the last decade or two has been to make these small holdings of sufficient area to maintain a family without necessitating outside work. Considerable family labor is found on them. They are established both by private initiative and State aid. Government legislation enacted in 1899, with several modifications since, enables desirable farm laborers who wish to get started on a small farm to borrow money at low interest rate on a long-term basis for purchase of land.

The Danish type of agriculture with its production of animal products and its cooperative organization, which gives to the small individual producer the benefits of marketing his high-quality, standardized products through efficient group distribution, is a favorable type of agriculture for the small holder.

Danish agriculture also shows a unique progress toward farm ownership. An official investigation made by the Danish Statistical Department on the trend of farm ownership versus tenancy for the period from 1850 to 1905,[8] shows that farm tenancy in Denmark decreased from 42.5 per cent in 1850 to 10.1 per cent in 1905. No official survey has been made since 1905, but according to the best unofficial investigation at least 92 per cent of the farmers in Denmark now own the land they cultivate. Furthermore, where farm tenancy is practiced, it is conducted on the basis of long-term arrangements. That the farmer owns the land he cultivates or even leases his farm for a long period of years, assures a degree of permanency that gives solidarity to cooperative associations.

## PRINCIPLES OBSERVED IN DANISH COOPERATION.

Certain forms in organization and operation and certain legal aspects are common throughout all branches of Danish cooperation.

### BUSINESS ORGANIZATION.

The Danish cooperative system is a business organization built on a sound economic foundation, developed independently of all State, political, religious, and social-class points of view. Cooperative organizations in Denmark have never received financial aid from the State government, except in the case of cooperative breeding associations for livestock improvement. This means that the cooperatives always meet on the ground of common economic interests. The movement rests on an intelligent membership, possessing a rational understanding as to the meaning, responsibilities, and value

[8] Danmark's Statistiske Departement, Statistisk Sammendrag, 1913, p. 13.

of cooperation. The Danish rural educational system, with its people's colleges (general adult education for farmers' sons and daughters), its 27 lower agricultural schools, and its Royal Agricultural College, makes possible this high standard of education among the rural population.

As a rule, no cooperative association is formed until a sufficient amount of patronage is insured to enable the association to operate in an economical and efficient way. No effort, however, is made to control a major part of the production unless this amount is necessary to insure the proper volume for efficiency and economy. In other words, efficiency and not monopoly is the goal.

### LEGAL ASPECTS.

There are no statutes in Denmark providing for the formation of cooperative associations. These organizations are unincorporated, voluntary associations, formed in accordance with what may be called common-law principles. Each has certain papers which state its purposes and define the method of operation and the rights and liabilities of the members. These papers are analogous to the constitution and by-laws of an unincorporated association operating in this country, and they constitute contracts or agreements between the association and its members, and between the various members, which are enforceable in the courts.

The liability of the members of one of these associations for its debts may be likened to the liability of partners in this country for the debts of the partnership. The members are called upon to pay such debts only in the event that the association fails to meet them, and in practice this rarely occurs. The number of associations in Denmark that fail is small. The liability of members of such an association for its debts presents a strong contrast to the situation which normally exists in this country of nonliability on the part of the members of an incorporated cooperative association for its debts. In this country, as in Denmark, the members of an unincorporated association are usually held liable for its debts.

In the case of creameries and local purchasing associations, the liability of each member for the debts of the association is unlimited; that is to say, a creditor of the association in the event that he failed to obtain payment therefrom, could recover the entire amount from a particular member. As between the members of an association, an equitable contribution in such an event could be required from each member. A number of cooperative creameries or other local commodity associations frequently dispose of their products through a sales organization. In such cases the liability of each of the creameries or other local commodity associations, for the debts of the sales organization, is limited to a certain fixed amount. In some instances the extent of the liability of the individual member of an association depends upon the extent of his patronage. The greater his patronage, the greater his liability.

### BOARD OF ARBITRATION.

According to the constitution and by-laws of most Danish cooperative associations all disputes and disagreements arising between individual members and the local association and between the local asso-

ciation and the central association are settled by a board of arbitration formed by the association and can not be taken into the courts of the country, but claims by third persons against an association may be settled in the courts.

The constitution and by-laws which are signed by the individual members in the cooperative bacon-factory associations and cooperative purchasing associations for buying feeding stuffs and fertilizers specify that all disputes, disagreements, and differences, except debts, that may arise between the individual members and the local association and between the local and the central association will be settled by a board of arbitration and can not be taken to the courts.

The constitution and by-laws which the individual members of each cooperative creamery association sign, as a rule provide that any member who fails to deliver his milk may be required by the courts to pay the creamery association the amount which it suffers by his failure to deliver his milk. It is presumed that this will be at least 50 öre (13.4 cents at par) per day for each cow, but a larger amount may be recovered if incurred.

### FINANCING METHOD.

As a general rule, the Danish cooperative marketing and purchasing associations are nonstock associations. The necessary fixed and operating capital for carrying on the business is created by loan, which is guaranteed by the members. With the local association, individual members pledge their guarantee jointly against all obligations incurred by it; but, with the central association, each local association pledges its guarantee for a definite amount. In the latter case the individual members either sign themselves or authorize the local board of directors (provided for in the constitution and by-laws) to sign the guarantee pledge certificate, which is then forwarded to the central association to be used by it for providing necessary funds to carry on its operations.

As regards the creditors, the individual members are jointly liable, but within the local association the liability is apportioned according to the members' patronage. The Danes have found that a group of farmers within a neighborhood, where there is a degree of personal acquaintance, agree to the joint liability feature; but when the activities of a cooperative organization extend beyond the local community unit, the farmers in the respective local associations are unwilling to assume joint liability with associations in other sections of the country unless the guarantee assumed by each local association is limited to a definite amount. This method appears to be well adapted to the Danish credit system.

### COMMODITY SELLING AND BUYING.

In the whole field of Danish agricultural cooperation the trend of development has been to apply the principle of specialization. The common practice in both the selling of agricultural products and the buying of farm supplies, such as fertilizers, feeding stuffs, cement, and coal, is to form special associations for special purposes. In other words, the farmers organize and operate along commodity lines.

### STRONG LOCAL ORGANIZATION.

The structure of these cooperative associations is characterized by a strong local development, with a democratic membership control. The larger cooperative associations have been built from the bottom up around local undertakings. The need for cooperating with other similar associations, which was soon felt by leaders and local officers in the early days, prompted the local associations to federate into district, and eventually into provincial and national associations, along commodity lines. But the large associations operating to-day in every case have started from comparatively small beginnings.

Whether the central association, which is organized to handle one commodity, embraces the whole nation or only one province or district, its membership consists of local associations; the contract agreement is made through the local association. However, if a local association organized for a definite purpose desires to become a member of the central association which handles its commodity, its individual members must agree to the terms and conditions of the contract agreements as required by the central association. This form of organization is common with all the agricultural cooperative associations, except the Danish Farmers' Cooperative Association for Seed Growers. In this association, the central association operates on a contract agreement directly with each individual member.

It is significant to mention here, that the rate of mortality among local cooperative associations in Denmark has been very low. This is equally true of the large central federated marketing and purchasing associations. Among this latter group the Danish farmers have experienced but two failures: The Farmers of Denmark Butter Export Association, 1899–1908; and the Danish Farmers' Cooperative Potato Marketing Association, 1919–1921. The first is treated with the butter marketing associations (p. 25); while, in connection with the potato association failure, it may be said that, as yet, the Danes have failed to organize the marketing of potatoes successfully on a cooperative basis.

The Danish Farmers' Cooperative Potato Association (*Dansk Kartoffeldyrkerforening*), a nation-wide potato marketing organization, was formed in 1919. Contrary to the common Danish method, this new potato association set up the central machinery and then began to build the locals. With an enormous organization force and the advantage of a favorable foreign market demand, the association closed the first year's business with export sales amounting to $8,283,000 at exchange, and its membership totaled 350 local associations with 25,000 producers.

Instead of capitalizing its favorable position in the business cycle, by laying aside substantial reserve funds during the high prices in 1919 and the early part of 1920, the management continued its promotion work, both in membership organization and the building of warehouses. Enormous losses incurred in export trade, together with the market depression in 1920, wrecked the association in its second year's operation. Its failure is attributed to inefficient management and a mushroom-like growth during an inflation period.

### CONTRACTS.

Within both the local and central cooperative associations contracts exist between the members and the association, binding the members to deliver their total production of that particular commodity, except what is needed for home use, to the marketing association for a definite period; and, in case of purchasing associations, to buy their necessary supplies of that commodity from the association for a definite period.

The length of this period varies not only with the nature of the commodity handled but with different associations. It ranges from 1 to 20 years. The contract delivery period with the cooperative creameries is 5 to 20 years, but usually 10 years; with cooperative bacon factories 5, 7, or 10 years; with cattle export associations, 3 years; with cooperative butter export associations, 1 year; and the membership is automatically renewed for another year unless 6 months' advance notice is given previous to the close of each fiscal year. The contract in the cooperative egg export association is for 1 year, with 3 months' advance notice required for withdrawal at the end of each fiscal year. In the cooperative purchasing associations, the members are obligated, by a contract agreement, to purchase their necessary supplies from the association for a definite period: 5 years with the feeding-stuffs associations, 10 years with the fertilizer association, 5 years with the cement association, and 5 years with the coal association.

### POOLING.

As a general rule, the Danish cooperative associations operate on a pooling basis. As each member's products are assembled at the cooperative association's headquarters the products are classified, as to quality and grades, by the association. On the basis of the classification the association remits a partial payment for the products to the respective members on or soon after the delivery of products, and balance is paid to them at the close of a 6 or 12 month period. The quotations fixed by the different producers' associations usually serve as a basis for making this initial partial payment. The use of this quotation feature may well be illustrated as follows: When a member delivers hogs to a cooperative bacon plant, the first partial payment is made within a few days after the hog is slaughtered and has been classified as to weight and quality. The amount of this partial payment is determined by the weekly quotation set by the association. It is usually about 90 per cent of the market value of the hog. The balance is remitted in a final payment at the close of the 6 or 12 month period. A similar plan is used in the creamery, egg, and butter marketing associations.

These principles are common in Danish cooperation, but in the final analysis the commodity involved and the nature of the industry determine the more specific features in each cooperative enterprise. A specific and detailed treatment of the cooperative organization in each branch of Danish agriculture will be found in the succeeding pages.

## DAIRY INDUSTRY AND COOPERATION.

### EARLY DAYS OF DANISH DAIRY INDUSTRY.

The first interest in dairying in Denmark began with the larger estate farms about 1830–1840. The estate farm owners at this time were fully aware of the need of improved soil fertility if production was to be profitable on their farms. The keeping of cows would furnish the manures which their lands needed. It was merely a question with them of making dairying profitable. Incidentally they became interested in better dairying and the manufacture of dairy products which could be disposed of favorably on the foreign market. A large unit of butter production would justify the employment of skilled butter makers and dairy equipment, especially when they could market large quantities of first-class butter of a fairly uniform grade at higher prices.

Until 1850 only a few milk cows were kept on the peasant farms (*Böndergaarde*, middle-size farms). They were mainly to utilize the summer grasses, hay, and straw during the winter months, and to provide a few cattle to sell for meat. In addition to raising calves, the milk production was partly consumed by the family and only a small part was made into butter and cheese. These dairy products, however, were made in small batches, and the quality was often poor.

### ENGLISH MARKETS.

With increased butter production on the estate farms in the middle of the last century, Denmark exported small quantities of butter. Some went to Norway, and the remainder was sent through the Kiel and Hamburg markets, later reaching England as Kiel butter. The antipathy aroused between Germany and Denmark as a result of the wars of 1848–1850 and 1864, prompted the Danish traders to seek direct market contacts in England, which were greatly accommodated by the establishment of regular steamship transportation facilities between Denmark and England in 1865. These new market possibilities for Danish butter, together with the declining markets for Danish export grain, brought great influence to bear upon the change from grain farming to dairying in Denmark at this period.

### NEED OF STANDARDIZATION.

The Danish farmer found that, to place a product successfully on a foreign market this product should appear on the market in large quantity and should be of one fairly uniform grade. Even in the sixties and seventies, when Danish butter first began to come on the English markets, the English buyers did not have time to sample and inspect a large number of small shipments of butter. The English butter traders not only wanted shipments of butter in large quantities of one grade, but they offered higher prices for large shipments. The estate farmers were much better equipped to supply this advantageous market demand than the smaller farmers. Small farmers could not sell many small batches of different grades of butter on the English market. Even if these small lots were gathered up through the local village storekeepers and the bulk

brought on the English market by Danish exporters, it was not a large shipment of one uniform grade.

The marketing problem confronting the average Danish farmer in the seventies and eighties is illustrated by the experience of a small farmer on the Jutland Peninsula with a herd of six cows. He sent his butter to a large butter exposition in London and won the first prize. But this recognition on the world butter market did not give him a higher price for his small weekly butter production. Like many other individual farmers who sent only small amounts, he did not receive the top price, regardless of the fact that he was selling a premium quality butter.

This situation made it clear to the farmers that some scheme must be devised for grading and standardizing the "farmers' butter" before it reached the English markets. The first step was the erection of butter-packing establishments, by both joint-stock companies and private individuals in many farm communities. Butter was manufactured at home and then sent from the various farms to this butter-packing establishment which was generally located in a village or some central market town. Here the farmers' butter was repacked, blended, and sorted, in the effort to prepare a uniform export product. This farm butter-making and central butter-packing system made it possible for the small farmers with a few cows each to produce an export product. But as the system did not provide the largest utilization possible of the milk and butter it did not prove satisfactory. Before the introduction of cream separators the system was primitive and wasteful. Another waste occurred in the blending and repacking, and the butter was not a first-class product. In 1882[9] the yearly average price paid for the farmers' butter was about 25 per cent below that paid for estate butter.

The next step was the establishment of the early creamery, where both the private and joint-stock company plans were tried, but without encouraging results. As early as the seventies several attempts were made to erect a community creamery and to operate it on a cooperative basis. Such attempts failed to materialize, with one or two exceptions[10] where the farmers started creameries on cooperative lines but failed to win favor and the creameries soon passed into the ownership of a single individual, or a joint-stock company.

### THE FIRST DANISH COOPERATIVE CREAMERY.

The Hjedding Creamery (*Hjedding Mejeri*), started by a few farmers surrounding the village of Hjedding, West Jutland (about 25 miles northwest from Esbjerg), June 10, 1882, was organized on the sound cooperative principles that are characteristic of the 1,335 cooperative creameries operating in Denmark to-day. Consequently it is acclaimed as the first typical Danish cooperative creamery, and with it began the new dairy industry that spread rapidly to every section of the country.

The question as to how the first cooperative creamery came to be organized is frequently asked.[11] In the winter of 1881–82 the

[9] Hertel, H. Andelsbevägelsen, 1917, p. 133.
[10] Andelsbevägelsen, 1917, p. 127.
[11] Mälkeritidende, 1907, p. 451–63.

farmers in the neighborhood of Hjedding held a meeting to further the interests of dairying. A young dairy specialist, Stilling Andersen, demonstrated the making of the best and most butter from milk. Interest centered around the organization of a local society to employ a dairy specialist to improve farm butter, which should be delivered to a butter-packing station, and there graded, sorted, and packed for export. Another meeting followed. Mr. Andersen enthusiastically suggested the cooperative plan as a means toward the manufacturing of a standardized-quality product that would command higher prices. Definite plans were made to form an association and build a creamery, if the milk from 400 cows were subscribed by contract. Farmers representing only 300 cows agreed to join, but this did not deter Mr. Andersen, who was later employed as creamery manager. He personally engaged, on contract, the milk from 100 cows owned by farmers who feared to join. The first cooperative creamery thus became a reality and it is still in operation.

FIG. 6.—A typical cooperative creamery in rural Denmark.

The Hjedding creamery filled a recognized need in the dairy industry. It was established on a sound economic basis and performed the function of assembling and processing the products more efficiently than attempted by any previous plan. Where one cooperative plant received the entire milk production in the immediate vicinity, milk transportation costs were reduced to a minimum and the plant was supplied with sufficient volume to operate at a high degree of economy. These factors had figured in the failure of private and joint-stock company plants. In the cooperative plant (fig. 6), the community's entire milk production was assembled and manufactured into a standardized-quality product which could be merchandized properly; and the individual producer, whether he milked 3 or 75 cows, derived the benefit of large-unit operations and better marketing.

News of the success and popularity of the first cooperative creamery soon spread to all sections of the country. Its economic benefits

were realized immediately by the farmers. Many new cooperative creameries were built. The movement enjoyed a spontaneous and most remarkable growth the first 10 years. In an official survey [12] conducted in 1914, among the 1,168 cooperative creameries operating that year, it was found that more than half were established before 1890; 80 were started during the 5-year period 1881–1885; 595 during 1886–1890; 153 during 1891–1895; and 110 during 1896–1900. Although the early membership came from the small and middle-size farms, the merits of the cooperative plan were soon recognized by the large-estate farmers. This is indicated by the fact that the number of private estate-farm creameries declined from 264 in 1900 to 16 in 1914.

In 1922,[13] of the 1,661 creameries in Denmark, 1,335 were cooperative, and these received approximately 90 per cent of the total milk production of the country. Among the 326 private creameries are a few private estate-farm creameries, but the greater number are small plants and many of these engage chiefly in the town and city milk trade.

In tracing the development of the Danish dairy industry due credit should be given to the introduction of the mechanical cream separator. The first cream separator was introduced in 1878 by the inventor, L. C. Nielsen,[14] followed by Doctor De Laval's cream separator the next year. They came at a most opportune time and introduced new technical methods in dairying which enabled the smaller farmers to combine their milk production, and manufacture a standardized quality for export.

The lack of a sufficient number of skilled creamery managers was the chief problem encountered during the early part of the cooperative creamery movement. The agricultural schools set about supplying this need. Special courses for training young men in butter-making and creamery management were started in two leading agricultural schools. Technical advice in manufacturing, management, grading, and quality improvement was given by the State dairy specialists, the Royal Agricultural College, and the State experimental laboratories. The cooperative idea originated with the farmers holding small and middle-sized farms, and not with the estate-farm owners or with philanthropic leaders. It came as an economic necessity to meet a new marketing situation, which demanded standardized high-quality agricultural products.

### FORM OF ORGANIZATION.

The sale of shares among the farmers as a means of providing capital is unknown with the Danish cooperative creamery. There are no initial fees and there is no outlay of capital on the part of the members. The financial arrangement is planned on a definite period of years (usually 10), with a contract agreement which involves a delivery pledge and joint financial security among the members.

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[12] Statistiske Meddelelser 4 Räkke 49 Bind, 1 Häfte, 1914.
[13] Courtesy Kontoret for Mejeri-Statistik, Aarhus.
[14] Hertel, H., Andelsbevägelsen, 1917, p. 115.

### DELIVERY AGREEMENT.

Each member agrees to deliver his total milk production to the creamery for a period of years, excluding home consumption. This period may range from 5 to 20 years. Proper feeding and cleanliness in handling the milk are pledged. The creamery manager may reject any milk at the creamery if the quality is questionable.

### FINANCES.

The necessary capital, both for building and operating, is created by a loan, which the association makes with a bank or savings institution. The members are bound, jointly and severally, for all financial obligations incurred by the association. To the creditor, the members are jointly liable, but within the association the liability is apportioned among the members in accordance with the quantity of milk delivered during the current period.

Withdrawal may occur at the end of each period with one year's advance notice. Otherwise a member is bound for another period. At the close of each contract period the association's property is appraised by a committee, and the valuation fixed is approved by the general assembly, which is the general meeting of the members. The part of the valuation sum which the association actually owns is divided among the members in proportion to the quantity of milk delivered during the last period. In early days this sum was usually paid to the members at the close of each period; but the weakness of this plan was soon recognized by the leaders, and now the common practice is to accredit each member's share to him in the form of a share certificate bearing current interest rate, and one-tenth of the principal is paid each year to its holder during the next period. A member who withdraws may be paid the greater part of his share outright. Beginning with each new period the association will arrange for a new loan to cover any new improvements and old debts.

### MANAGEMENT.

The members of the cooperative creamery usually hold a general meeting every six months, when the financial statement is presented. The supreme authority in the association's affairs rests with the general assembly, where each member has one vote. A board of directors of seven or nine,[15] elected by the members, assumes the business control and supervision on behalf of the shareholders, and employs the creamery manager. The board usually meets once a month when proposed business affairs are dealt with, and keeps in active touch with the business conditions of the association. Ordinarily it is not occupied with the daily affairs and management of the creamery. Usually none of the officers are salaried. Only in recent years, in a few instances, has the chairman of the board received a small salary.

Management of the creamery and its business transactions are delegated to a competent, technically-trained dairy specialist, who arranges for the necessary personnel and makes purchases of dairy machinery, equipment, and supplies, with the board's approval. The

[15] This number may vary from 5 to 17.

manager's salary is based on the creamery managers' minimum wage scale. This minimum wage scale provides for a fixed salary and a commission based on the quantity of milk handled by the creamery.[16] In addition the manager has free residence and light, heat, and milk for his household.

### FEDERATION OF CREAMERIES.

The creameries located within certain district areas have formed district service associations. The chairman of the board, together with the local creamery manager, represent the local creamery association at the district association meetings. The 23 district creamery associations in the Kingdom are again organized into three provincial organizations. The provincial organizations (*Jutland* and *Själland-Lolland-Falsterske-Bornholmske*) each comprises several district creamery associations, while the local societies on the island of Funen are organized directly into one association which covers the entire Province. Thee three provincial associations form the national service federation of the creameries.

The National Federation of the Danish Creameries (*De Danske Mejeriforeningers Fallesorganisation*) serves and acts as the national organ in all affairs pertaining to the common interest of the creameries. Its activities include the supervision of all matters, both at home and abroad, which may not concern any particular creamery but involve the interests of all, such as matters pertaining to dairy legislation. For instance, the federation appoints a committee to represent the producers on the Copenhagen Butter Quotation Board, and a committee on dairy statistics, which supervises the activities of Denmark's Dairy Statistical Bureau (*Kontoret for Mejeri-Statistik*, Aarhus) collects data and publishes yearly reports on dairy statistics, butter-price quotations, and other material dealing with the management of milk, butter, and cheese production in Denmark. Among the current questions with which the national creamery association is dealing at present are the stabilization of the weekly butter prices fixed by the Copenhagen Butter Quotation Committee, and the betterment of the quality of milk delivered to the creameries through the adoption of the quality-payment basis by the local creamery associations.

Activities of the national federation are directed by a board of directors, consisting of seven members. Three of the members are the presidents of the provincial organizations, and the other four are elected at the annual meeting of the committee of representatives (*Repræsentantskabet*), each for a term of two years. Members of the above committee are elected by the district creamery association within each provincial organization on the basis of one representative (*repräsentant*) for each 20 members (creameries).

Financial expenditures incurred by the national federation are distributed among the three provincial organizations in proportion to the quantity of milk which the creameries within the provincial organizations have handled during the previous fiscal year.

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[16] With the middle-sized creamery, the fixed salary is around 2,400 kroner ($643 at par) per year, together with the butter value of 6 pounds of milk for each 1,000 pounds of milk treated and 1½ öre (0.402 cent) per each 2.2 pounds of cheese manufactured.

### DANISH CREAMERY MANAGERS' SOCIETY.

The Danish Creamery Managers' Society (*Dansk Mejerist Forening*) is an organization among the managers of the creameries formed in 1887. The managers work together to keep in touch with the most scientific progress made in the manufacture of butter and cheese. The society has taken a prominent part in organizing butter exhibits, which have helped to bring about a creditable improvement in the quality of Danish butter. The society publishes the "Mälkeritidende," the only strictly dairy journal published in Denmark. The minimum wage scale for creamery managers is arranged by two committees, one from the Creamery Managers' Society and the other appointed by the National Federation of the Danish Creameries. The creamery helpers also have their organization.

### SIZE OF THE DANISH COOPERATIVE CREAMERY.

As the whole milk is sent direct from the farm to the creamery, these plants are comparatively small. They are built to handle the milk production in their immediate vicinities. The average creamery handles from 3,000,000 to 5,000,000 pounds of whole milk annually. As indicated by Table 1, the average creamery has about 150 members with from 800 to 1,000 cows.

TABLE 1.—*Average number of shareholders and cows and average quantity of milk handled in each Danish cooperative creamery.*[1]

| Year. | Shareholders. | Cows. | Milk received. |
|---|---|---|---|
| | *Number.* | *Number.* | *Pounds.* |
| 1900 | 154 | 889 | 4,416,500 |
| 1910 | 158 | 980 | 5,637,401 |
| 1915 | 151 | 931 | 5,574,173 |
| 1920[2] | 143 | 825 | 3,956,079 |
| 1921 | 144 | 869 | 4,880,183 |
| 1922 | 141 | 861 | 4,970,760 |

[1] Source: Courtesy, Kontoret for Mejeri-Statistik—Aarhus.
[2] World-War conditions cut milk production

### ASSEMBLING THE MILK.

The general practice in Denmark is to assemble at the cooperative creamery the whole milk from the individual farms. This naturally eliminates the use of cream separators on the farm. The creamery is built near the center of the community from which it draws its membership, in the rural village or often in the open country. In early days, it was a common practice for the members on a milk route to arrange among themselves to drive the milk wagon on certain days each month. Now the common arrangement is for the association to engage one farmer on each route to collect the milk each morning at the farmstead or farm's private road. The same wagon returns the milk cans filled with skim milk. The remuneration is a fixed sum per ton of milk delivered.

#### PAYMENT FOR MILK.

The creamery associations all operate either on a 6 or 12 months' milk pool. A partial payment is made to the milk deliverers once or

twice a month. It has been a common practice to determine the amount of this partial milk payment by the amount of money received for the butter sold. A more recent practice is to make a payment every two or four weeks, which is based upon the weekly Copenhagen butter quotation. The milk payment, of course, is based on weight and fat content.

### MANUFACTURING PLANTS.

The creamery is owned and operated by the milk producers on a cooperative basis. Some of the most important and expensive services in marketing are performed here. It is common to find the most modern machinery and equipment in the cooperative creameries, the best technical methods, and the employment of the best technically trained butter and cheese makers.

The cooperative creameries engage chiefly in the manufacture of butter, which takes 95 per cent of the sweet milk received at the creameries. (See Table 2.) Only 2.6 per cent of the whole milk is sold as sweet milk, and this is retailed largely by the creameries near larger towns and in the neighborhood of Copenhagen.

Normally, about 90 per cent of the skim milk is returned to the farms. Feeding of pigs is common on all farms, but the number of pigs kept on a farm is largely regulated by the amount of skim milk available.

TABLE 2.—*Uses made of milk received at Danish cooperative creameries.*[1]

| Year. | Whole milk. | | | Skim milk. | | |
|---|---|---|---|---|---|---|
| | Local sales. | Manufacture of cheese. | Manufacture of butter. | Returned to patrons. | Local sales. | Manufacture of cheese |
| | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* | *Per cent.* |
| 1913 | 0.5 | 0.5 | 99.0 | 93.5 | 2.2 | 2.3 |
| 1914 | .5 | .3 | 99.2 | 95.2 | 2.3 | 4.4 |
| 1918 | 3.9 | 1.0 | 95.1 | 84.6 | 6.9 | 8.5 |
| 1919 | 3.5 | 1.7 | 94.8 | 81.8 | 7.5 | 10.7 |
| 1920 | 3.1 | 2.0 | 94.9 | 87.1 | 4.1 | 8.8 |
| 1921 | 2.6 | 2.4 | 95.0 | 86.5 | 3.8 | 9.7 |

[1] Source: Courtesy, Kontoret for Mejeri Statistisk—Aarhus.

Manufacture of cheese is practiced chiefly as a side line to utilize what little surplus skim milk is not returned to the farm. In 1921 only 9.7 per cent of the skim milk and 2.4 per cent of the sweet milk received at the cooperative creameries was used for cheese. The principal aim in cheese manufacture has been to supply home consumption, but in recent years there has been increased interest in cheese production for export.[17] Nearly 1,000 Danish creameries are now equipped to make cheese.

Leaders within the dairy industry have given attention of late to possible developments of business in condensed milk and milk powder. A cooperative association for this purpose has been formed

[17] According to the Bilag til Beretning, 1922, issued by the Kontoret for Mejeri Statistik, Aarhus, "The cheese production last year (1921) is estimated at 77 million pounds and during the year April, 1921, to March, 1922, the Danish cheese export was 27.2 million pounds."

by the Federation of the Danish Cooperative Creameries, which has established a number of factories to which milk from the neighboring cooperative creameries is delivered.

### GRADING AND PACKING.

Cooperative effort to manufacture a uniform grade of high-quality butter has been stimulated by a unique system of competitive butter exhibitions. Several local competitive butter exhibitions are held in each district annually, which are arranged through the joint effort of the district creamery associations and the Dairy Managers' Association. A large exhibition is held in each Province annually, sponsored by the respective provincial agricultural societies. Participation is voluntary, but the active interest among the producers and managers prompts most of the creameries to take part in these exhibitions.

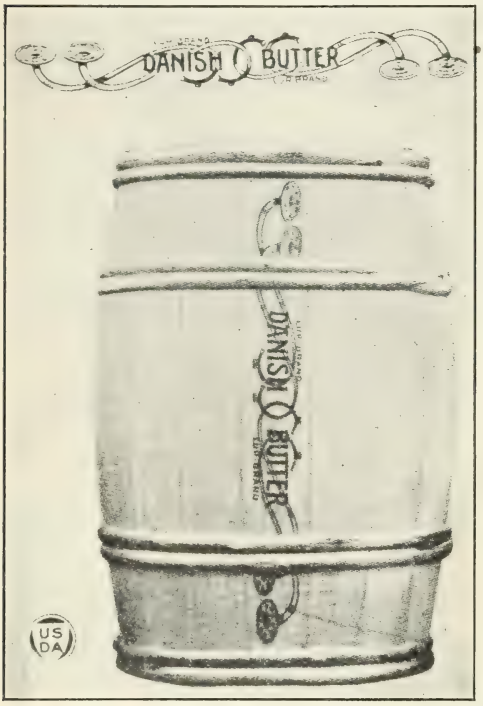


FIG. 7.—The standard (fir-barrel) cask, 112 pounds net, with the Danish butter trade-mark "Lur Brand" stamped on two staves on opposite sides. It is indicated by two pairs of war trumpets with the words "Lur Brand" and "Danish butter." The word "Lur" is the old Danish name for war trumpets, sounded in pairs by warriors in the Bronze Age.

This effort to raise the quality standard of the entire production has been greatly encouraged through official butter-judging exhibitions held at the Government agricultural experiment laboratory at Copenhagen on Monday of each week. Samples of butter from about 130 creameries are judged and scored each week, according to quality and water content, by nine official judges who are butter merchants, dairy specialists, and butter makers. The exhibitions are arranged so that the judging of a creamery's butter may occur on the same day that the week's production reaches the English consumer's table. A leaflet with complete results of each exhibition is returned to each creamery. A creamery whose butter is below requirements is given expert advice regarding the defects. At first creameries voluntarily sent samples of their butter, but since 1912 these official butter judgings are compulsory for every creamery that wishes to use the "Lur Brand" trade-mark.

As early as the nineties the Danish farmers began a voluntary movement to have the creameries use the common trade-mark including the words "Lur Brand" and "Danish Butter" (fig. 7).

Legislation enacted in 1906 and amended in 1911 adopted "Lur Brand" as the national mark on all export Danish butter.

When each creamery registers with the Government for the use of this common trade-mark, it is given a number which is a part of its "Lur Brand" mark. With the registered number of the creamery that manufactured and packed the butter stamped on each cask, the Danish butter on the retailer's counter in England can be traced back to its producer. According to Danish law, the "Lur Brand" guarantees the butter to be manufactured from cream or milk which has been pasteurized (heated to at least 170° F.) and to contain not more than 16 per cent of water.[18] The creameries using the "Lur Brand" are supervised by Government dairy experts. Upon the request from the experiment laboratory authorities, either by letter or telegram, without any advance notice, each creamery is obliged to forward immediately a cask of the day's butter production.[19] If at any time, the official judgings show that the butter manufactured in a certain creamery is below the standard requirements, said creamery loses the "Lur Brand" privilege. This restricts its butter to home consumption until the standard has been raised to satisfy the requirements.

The daily butter production in each creamery is packed in the regular standard cask which contains 112 pounds net of butter. The trade-mark law requires the "Lur Brand" to be stamped on two staves on the cask. (See fig. 7.) It is also required that, as the creamery packs the butter, a small piece of printed tissue paper (commonly called a "control slip") be placed on each end of the butter inside the cask. Government control numbers (control slips) consisting of small paper labels, each bearing the Government number, are issued to each creamery in series of 1,000. The first of each week the past week's butter production is removed from the creamery's storage room and started to market.

### UNIFORM SUPPLY.

The Danish producer takes a direct responsibility in marketing his products. He recognizes the need of a common understanding between the producer and consumer if a fair share of the consumer's price is to be returned to him for his labor. He has studied the particular tastes and demands of the ultimate consumer, and has adjusted the supply of his butter, as well as the grade and quality, to meet the consumers' demands. He has been quick to recognize the importance of establishing a steady flow of his products to the British market the year round. Herein lies the great fundamental contribution which cooperation has given to the Danish dairy industry. It has adjusted production to meet the two outstanding demands of the market—the established consumer's market demand as to quantity, and the standard market demand as to quality. A fundamental basis for efficient marketing, with costs reduced to the minimum, is thus provided.

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[18] To exclude all dangers of tuberculosis, the Danish laws also require that all skim milk returned from creameries must be pasteurized.

[19] This official exhibition controls the manufacture of a certain standard of butter. There is no further control after the Danish butter leaves the country. Private butter merchants might lower the standard of Danish butter by keeping in storage too long.

This uniform supply has been met through the development of winter dairying (root crops for winter feeding) which is now a common practice on all farms, and enables Denmark to maintain her butter production at a uniform level each week in the year. The wide difference in prices paid for butter during different seasons on the English markets 30 years ago does not now exist. Butter export from all other countries except Denmark is seasonal export. The English retailer supplies his customers with New Zealand and Australian butter in winter, but in summer he must change to butter from northern countries. (See fig. 8.) This change involves risks and speculative elements, which are ultimately charged to the marketing costs. Denmark can supply her English customers the year round, which fact, together with the uniform standard quality,

**Butter Imports into the United Kingdom from Denmark and New Zealand, by Months, for Year 1913.**

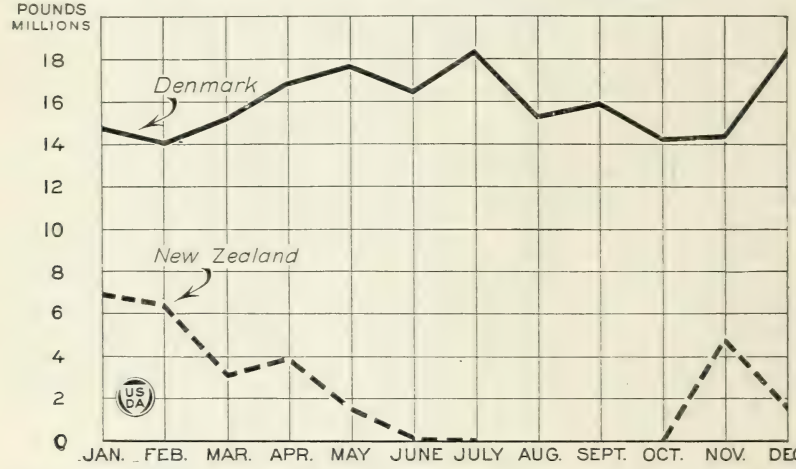


FIG. 8.—Butter imports into Great Britain from New Zealand and other countries are seasonal except from Denmark. The development of winter dairying in Denmark assures a uniform butter production throughout the year. This regularity of Danish butter imports to the British markets gives the Danish product a most advantageous market position with the British trade and consumers.

Source: Indberetning til Landbrugs Ministeriet fra Statskonsulent, Harold Faber, London.—"Landbrugsraadets Meddelelser," July 4, 1922.

makes it easier and cheaper for the merchant to handle Danish butter than the butter from any other country.

### MARKETING DANISH BUTTER.

Danish butter is now largely an export product. Margarine is commonly used on the family table in Denmark. Approximately 85 per cent[20] of the total butter production is exported, and it constitutes the nation's largest and most important export. As butter production increased during the last half of the nineteenth century, Great Britain became the principal foreign market. To satisfy the demands of the British consumers has been the chief aim of the Danish producers. The importance of the United Kingdom as a market for Danish butter is illustrated in Figure 9.

[20] Courtesy, Kontoret for Mejeri-Statistik, Aarhus.

### Distributing Practices and Methods.

Danish butter is not sold on an exchange. It moves regularly each week in a direct channel between the Danish creamery and the British retailer. All butter, except what is needed for consumption in the immediate community, leaves the creamery the first of each week. It is not kept in storage. Special transportation facilities are provided by the steamship lines. Several regular steamships prepared to carry Danish products run on a definite weekly schedule between principal Danish shipping ports and principal British ports. The creamery itself does not sell the butter to the English retailer but disposes of its weekly butter production to one of the so-called butter traders, of which there are about 40 in Denmark. They may be grouped as follows: (1) Cooperative butter export

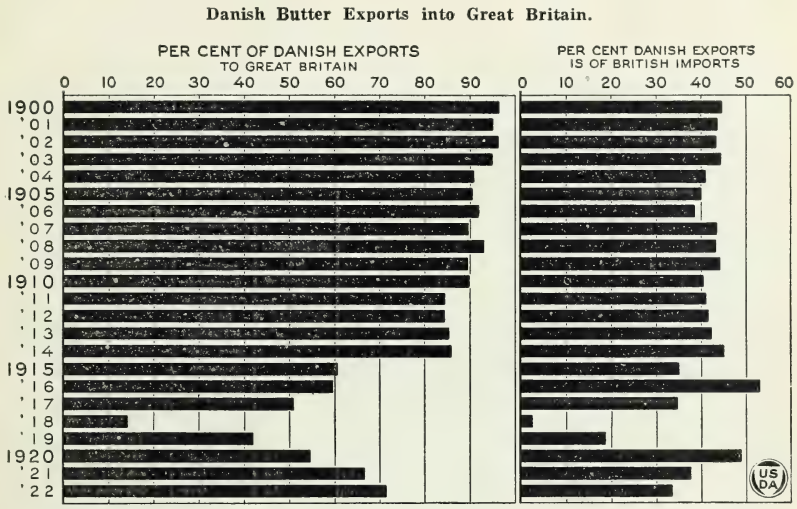


Fig. 9.—While the percentage of Denmark's total butter exports into Great Britain declined gradually the last four years previous to the World War, Denmark's proportion of the total butter imports into Great Britain for consumption remained constant, or approximately 44 per cent, until 1915. In 1922 only 71.5 per cent of the Danish butter exports went into Great Britain, as against 85.8 per cent in 1914. Denmark's share of British butter imports was 33.4 per cent in 1922, as against 44.9 per cent in 1914. Data based on Danish and British statistics.

associations, (2) English wholesale houses which have representatives in Denmark who purchase direct from the creameries, and (3) Danish butter merchants, who are largely exporters, but who also supply home trade.

### Cooperative Butter Export Associations.

Approximately 90 per cent of the milk production in the country is assembled and manufactured into finished food products in the cooperative creameries, but the producers have not as yet centralized the selling of their entire butter production in one central selling pool. Each cooperative creamery may choose to sell its butter independently or it may join a cooperative butter export association.

The first attempt among the cooperative creameries to consolidate the sale of their butter began in 1889 with the organization of the

Farmers of Denmark Butter Export Association. This association did business until 1908 when it was forced to discontinue. Its failure, according to Danish authorities,[21] was due to the fact that it did not operate on a strictly cooperative basis and was embarrassed by poor management. In 1895 the dissatisfaction with the Copenhagen butter quotations in regard to "overprices" and the need for certain trade reforms in regard to weight and payment for quality, prompted the farmers to form two cooperative butter export associations which are still doing a successful business. In the next few years other associations followed. In 1922, there were 11 export associations with a membership of 546 creameries, which handled over 82,000,000 pounds, or 38.8 per cent of the total Danish butter export. (See Table 3.) This membership constitutes about one-third of the total number of creameries in Denmark. These sales through export associations show an increase over pre-war times. In 1914,[22] 20.3 per cent of the total butter export (based on the value of butter and cream export) was handled by the export associations, which handled only 16.7 per cent in 1911.

TABLE 3.—*Danish butter exported through cooperative butter export associations.*[1]

| Year | Number of cooperative export associations. | Number of creameries members of cooperative export associations. | Danish butter export through cooperative butter export associations. | |
|---|---|---|---|---|
| | | | Pounds. | Per cent of total Danish butter exports. |
| 1918[2] | 8 | ---------- | 23,911,000 | 74.0 |
| 1919[2] | 8 | ---------- | 34,336,000 | 42.4 |
| 1920 | 11 | ---------- | 57,921,000 | 35.1 |
| 1921 | 11 | 550 | 78,647,000 | 38.7 |
| 1922 | 11 | 546 | 82,393,000 | 38.8 |

[1] Source: Official figures from the associations and De Samvirkende Danske Andelssmörexport foreninger, Aarhus.
[2] Influenced by war conditions.

Conditions created by the World War brought about abnormal circumstances in regard to the activities of the export associations. The dangers involved in water transportation made butter exportation very uncertain, and private exporters often refused to handle the butter. Production was decreased, but home consumption was stimulated enormously when the war cut off the usual supply of margarine so that it took the larger part of the butter. What was left for export was largely marketed through the export associations.

With the exception of the first failure, all of these export associations have met with substantial success and have won the confidence of their members and of the trade. It is significant that none of these associations has ever had any sensational, mushroom growth.

[21] Hertel, H., Andelsbevägelsen, 1917, p. 282.
[22] Faber, Harold, Cooperation in Danish Agriculture, 1918, p. 84.

Each export association has started business with a few creameries and each year a few additional creameries have joined. In the case of several of the older associations only one or two members have withdrawn during a period of 25 years.

Each association operates its business independent of other associations; and with the exception of the Danish Dairies Export Association, each export association limits its operations to creameries in the particular section of the country where its headquarters are established. However, these associations do work together in carrying out certain trade policies and standards, which serve the common interests of the producers and the Danish butter trade in general. For this purpose the 11 export associations are federated into one national organization—The Federated Danish Cooperative Butter Export Association (*De Samvirkende Danske Andelssmörexport Foreninger*). The standards and trade policies practiced by the export associations have been a dominant factor in establishing the

FIG. 10.—Warehouse of the East Jutland Cooperative Butter Export Association at Aarhus. Danish butter arrives from local creamery packed in standard casks, bearing the national "Lur Brand" trade-mark.

enviable reputation for trade dependability and high quality which the Danish butter trade enjoys on the home and foreign markets.

The Danish Dairies Export Association (*Danske Mejeriers Andels Smöreksport forening, Copenhagen*) with its 227 creameries, is the largest export association in Denmark and has members scattered in all sections of the Kingdom, while the other associations restrict their membership to creameries in a limited territory. This association has sufficient property and reserve funds to provide its own security for necessary operating capital without asking its members for any financial guaranty. Instead of remitting to the creameries according to the Copenhagen butter quotation, it remits to them each week the actual price received for the butter, minus the cost of operations. These two features are undoubtedly looked upon with favor by many creameries, and largely explain the larger membership of the "Danish Dairies."

The practices and operations of the cooperative butter export associations may be summarized as follows:

(1) When a creamery joins an export association, it agrees by contract to deliver its total butter production to the association for one year, except what butter is needed for home consumption. Withdrawal may occur at the end of each fiscal year, provided six months' previous notice is given.

(2) Butter export associations are nonstock associations. The necessary fixed capital is supplied by loan and no initial outlay of money is required by members. In addition to the delivery pledge obligation, the members are jointly liable for any financial obligation incurred by the association. However, the common practice is to restrict this liability to a certain limit. A marketing terminal of this type requires only a comparatively small investment with modest offices and warehouse at shipping port (fig. 10) where the butter is assembled from creameries in the surrounding territory. No butter is kept in storage; clean sales are made each week. Butter trade of this type, with standarized products, requires only a comparatively small operating capital.

(3) The control of the association lies with a committee which usually consists of three representatives from each creamery elected by the local membership. This large committee of representatives elects from its own number a board of five directors. This board employs an experienced butter merchant to manage the association's business.

(4) Each week's butter production in the local creamery up to Monday, inclusive, is shipped either Monday afternoon or Tuesday morning to the warehouse of the export association. Here each creamery's butter is scored in weekly judging contests arranged by the association. The judges are selected from the trade, creamery managers and government dairy specialists. With this quality classification as a basis for paying the creameries each week, the butter is then pooled and sold by the association. The price determining the partial payment, which the export association remits to the creameries for their butter the same week, is based on the coming Thursday's Copenhagen butter quotation. In one association the actual paying of this partial payment is deferred one week, giving the association the use of the money for operating purposes.

The surplus earnings are retained by the association and remitted to the creameries at the close of each fiscal year. Substantial reserve funds are provided for in each association. These associations usually own stock in the Danish Cooperative Bank, and some associations are accumulating a special insurance fund, proposing to establish their own sea-risk insurance.

(5) The export association takes care of transportation charges from the creamery to its warehouse at the shipping port. With the Danish butter trade to Great Britain, sales by the export association are made largely to wholesalers and larger retail buyers by telegraphic communication each week on definite order at a fixed price basis, f. o. b. Denmark. In pre-war times, large quantities of Danish butter were sold direct to retailers in Great Britain, but since the war British butter trade conditions have eliminated most of this former direct retail and wholesale trade, and large quantities

of Danish butter now go through the British butter import merchants.

### BRITISH BUYERS IN DENMARK.

The English Consumers' Cooperative Wholesale Society, Manchester, which has been buying butter in Denmark for over 40 years, is among the largest buyers of butter in Denmark. It has established its own purchasing depots in five Danish ports, with its own representatives, who purchase directly from the creameries. These purchases are usually handled on a contract agreement whereby the creamery agrees to deliver its weekly butter production for a definite period (three to six months, or a year) to the Consumers' Wholesale Society. The price arrangement is based on the weekly Copenhagen butter quotation as the minimum price, and usually an "overprice" is paid. The distribution is direct, as the bulk of the society's purchases is shipped direct from the collecting depots in Denmark to the local consumers' retail stores in England. Here we have international cooperative trade in which the consumers' cooperative enterprise engages in the marketing by going direct to the producer's cooperative plant.

Another large British wholesale buyer of Danish butter with its own purchasing depots in Denmark is a joint-stock company. This firm distributes its purchases of Danish butter through its own chain of hundreds of retail stores in Great Britain. In normal times, approximately one-third of the Danish butter export is handled by these two large buyers. Other smaller British companies have depots and buyers in Denmark.

### DANISH BUTTER EXPORTERS.

Private butter merchants constitute the third group through which Danish butter is sold. Wherever possible they buy direct from the creameries and enter into the butter trade both in Denmark and on foreign markets. This group, together with the smaller British buyers in Denmark, handles about one-third of the Danish butter export.

### PRICES.

The price paid the creamery for its butter, whether delivered to the cooperative butter export association or purchased by the British buyers or by Danish butter merchants, is always based on the Copenhagen butter quotation, which serves as a basis for paying the creameries and indicates what the foreign buyers must pay. In pre-war days, Danish butter was sold to British buyers the first part of each week on a price basis "subject to" the coming Thursday's Copenhagen butter quotation.

The Copenhagen butter quotation is fixed each Thursday at 2 p. m. Two committees, one of producers and one of butter merchants, meet and either agree or compromise on a price. Basis for this quotation is reached by checking the actual price which Danish butter has reached on foreign markets. The accuracy of this quotation is supported to a high degree by the wide knowledge which the two committees have of the immediate demand. When issued, it is immediately given wide publicity in Denmark, the United Kingdom,

and other foreign markets. This quotation serves as the price basis for that week's butter delivery and for price settlement between the local creameries and the export associations and all other butter merchants.

### EFFECT OF WAR CONDITIONS.

The first period of this century witnessed the development of a rather unique form of trade with Great Britain in Danish butter. The last years prior to the World War, a large part of the Danish butter for Great Britain was sold and shipped by the Danish shipper (either the cooperative export associations or the Danish butter merchant) direct to hundreds of British retailers and small wholesalers. This system had practically eliminated the British butter-import merchant, and was rapidly going around the large wholesaler. This regular retail customer bought from six to a dozen casks of Danish butter each week. Contracts existed, usually for a period of one year, between the British retailer and the Danish shipper, for regular shipments of butter each week at a price subject to the Copenhagen butter quotation. That is, the beginning of each week, the day the butter left the creamery en route to the Danish shipping port, the greater portion of the butter was sold to the British buyers at a price subject to the coming Thursday's Copenhagen butter quotation. The pre-war trade form with its direct trade connection with the smaller dealers, which facilitated regular weekly orders to supply the actual demands for consumption, and Denmark's great importance in the British butter trade, aided the stability of the Danish butter quotations.

World War conditions altered this trade-form to a certain degree. Immediately on the termination of the war, with the importation of grains and concentrated feeds, Denmark began to rebuild its agricultural production. It began at once to reclaim its old markets for butter. Here it encountered new and embarrassing obstacles. Great Britain's political policy, developed during the war, favored and stimulated the importation of butter from her colonies. It was not until April, 1921, that Great Britain granted again free importation of Danish butter. After the abolition of British Government import control and war-time restrictions, the Danish producers found the Danish butter trade in new hands in Great Britain. They had lost direct connection with the British retailers. The Danish butter trade had crept into the hands of the British butter-import merchants. The bulk of Danish butter now went direct from the Danish shipper to the British import merchants, some went direct to wholesalers, but only a small part was sold direct to retailers.

New market conditions greatly increased imports of colonial butter; industrial depression and increased use of margarine were factors on the world's butter market which made it difficult for Denmark to pick up and unravel the tangled threads of her old trade form. However, Danish butter will always have a prominent place with British consumers, because of its consistent quality and regular supply in large quantities.

Denmark's butter production was practically back to normal in 1921, but the quantity of Danish butter that British markets would handle satisfactorily has been limited at times. Recognizing this

situation, in the last two or three years Denmark has searched earnestly for new butter markets, to which any surplus butter that would affect the prices on her principal market might be diverted. To trade on new markets involved new risks and often embarrassing experiences to the trade. The pre-war market organization was built largely to supply one market. Now a large part of the butter export is distributed to several markets. (Table 4.) If Danish butter is to be permanently distributed to several foreign markets, it is evident that the Danish farmers will need a more highly centralized distributive organization and also a daily butter quotation. With 90 per cent of the Danish butter manufactured in cooperative creameries, the producers might easily divert the selling of the bulk of their butter through cooperative export associations.

Trade on the world markets during the last two years has often been based on unnatural demand and supply trade, together with fluctuating money exchange rates and unstable markets. However, in spite of these difficulties, the Danes have marketed their surplus butter in a creditable way. This distribution to several markets has enabled them to sell their surplus butter export at favorable prices to the producers in spite of world economic depression.

TABLE 4.—*Distribution of Danish butter exports.*[1]

| Country to which exported. | 1913 | | 1921 | | 1922 | |
|---|---|---|---|---|---|---|
| | Pounds (000 omitted). | Per cent. | Pounds (000 omitted). | Per cent. | Pounds (000 omitted). | Per cent. |
| Total export [2] | 200,672 | 100.0 | 202,953 | 100.0 | 211,871 | 100.0 |
| Great Britain | 181,921 | 90.7 | 135,272 | 66.7 | 151,370 | 71.4 |
| Germany | 3,461 | 1.7 | 1,210 | .6 | 514 | .2 |
| Switzerland | 492 | .2 | 17,019 | 8.4 | 12,487 | 5.9 |
| Czechoslovakia | ([3]) | | 161 | .1 | 6,214 | 2.9 |
| Belgium | | | 7,447 | 3.7 | 16,005 | 7.6 |
| France | 2 | | 9,976 | 4.9 | 14,362 | 6.8 |
| Norway and Sweden | | | 17,236 | 8.5 | 7,399 | 3.5 |
| United States | 260 | .1 | 11,426 | 5.6 | 2,176 | 1.0 |

[1] Source: "3 Die Beretning om Landbrugsraadets Virksomhed" published by Landbrugsraadet, Copenhagen, 1923.

[2] 62,872,987 pounds of Danish cream exported in 1913 as against only 331,871 pounds in 1922.

[3] 9,474,347 pounds of Danish butter exported to Austria-Hungary in 1913—Czechoslovakia was then part of that empire.

In times of depression in trade the great aid to industry is standardized production and organized marketing. This has been effectively demonstrated by the Danish producers to a remarkable degree during the last three years. The new market conditions could not have been met with such favorable results if the individual producer had stood alone.

## BACON INDUSTRY AND COOPERATION.

The swine industry ranks next in importance to the dairy industry in Denmark in point of agricultural exports. In pre-war times, 1913, Denmark exported 272,000,000 pounds of bacon[23] to Great

[23] Practically all Danish bacon is marketed in the form of Wiltshire side with ham and shoulder attached, and this is all exported as bacon.

Britain, which was 98 per cent of the total Danish bacon export and 51 per cent of the total bacon imports of Great Britain. Swine production was greatly curtailed during the war, especially in 1918, when it fell to one-fifth of normal.[24] This curtailment was caused by the elimination of importation of feeds by submarine warfare and by the very small home-grain crop in 1917. During the last three years Danish swine production has increased rapidly. It was especially stimulated by the return of free trade with England in the spring of 1921, by favorable bacon prices, and by lower prices during the past two years on corn (maize) imported from the United States. At the close of 1922 the Danish bacon industry was nearly back to normal with an export of 247,000,000 pounds.

The two important phases of the swine industry in Denmark are pig breeding and the cooperative bacon factories. Pig breeding in Denmark supplied the home consumption in the eighteenth century and the first part of the nineteenth, but it was not an important part of Danish agriculture until the latter half of the last century. The swine industry was first stimulated by the rising importance of dairying, as the Danish farmer found the pig a profitable means of utilizing skim milk, buttermilk, and whey.

### THE GERMAN MARKET.

The history of pig breeding in Denmark falls into two distinct periods. Each period supplied a market which demanded a hog of a certain type. The first period, when Germany was the principal market for surplus Danish pigs, ends in 1887. Since that date Great Britain has been the chief market for Danish bacon.

Although a few thousand hogs were exported on hoof during the first half of the nineteenth century, the first important swine exports were made in the seventies and eighties. From 1881–1885, there was an average yearly export of 287,100[25] live hogs, for which Germany was the principal market. This market demanded a hog of the heavy, fat, lard type. The characteristics of the early native hog bred in Denmark fitted this demand.

Germany permitted the free importation of live hogs from Denmark until 1879, when an import duty of 2 marks (47.6 cents) per hog was imposed.[26] Six years later this duty was tripled; from 1887 to 1890 and again in 1895 Germany prohibited the importation of Danish live hogs. This protective-tariff policy of Germany, beginning in 1879, naturally stimulated Danish farmers to grow hogs of the bacon type. When the climax was reached in 1887, it became a matter of necessity for the Danish farmers to eliminate the heavy fat hog and improve the breed to meet the demands of the British market, which meant a radical change in type.

### THE BRITISH MARKET.

As early as 1860 some of the lighter-weight Danish hogs which reached Hamburg were slaughtered there and the bacon exported to

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[24] Danmarks Statistiske Departement Statistisk Aarbog, 1920:

| | |
|---|---|
| Official pig census, 1914 | 2,497,000 |
| February 5, 1918 | 513,012 |

[25] Larsen, O. H., Landbrugets Historie og Statistik, 1921, p. 291.
[26] Hertel, H., Andelsbevægelsen i Danmark, 1917, p. 190.

England. The higher prices which the Hamburg hog buyers in Denmark were able to offer for the bacon-type hog helped to stimulate the farmers' interest in this type, and in the seventies and early eighties prompted the erection of several private bacon factories in Denmark, which were operated principally for the British bacon trade.[27] These plants were small, because their supply of hogs was restricted to the surrounding districts. To get the bacon-type of hog required for their export trade, the farmers were encouraged to cross the native breed with the English Yorkshire. This improvement in breeding was inaugurated by the bacon factories, which purchased Yorkshire boars in England and placed them among farmers in the vicinities which supplied their plants. As the British bacon trade promised to be more profitable, this improvement in pig breeding soon spread to other sections of Denmark.

### RECENT GROWTH AND DEVELOPMENT OF THE SWINE INDUSTRY.

The Danish swine industry has made a tremendous growth and development during the past 30 years, both in increase in number of pigs and improvement in breed. The rapid increase in the number of pigs in Denmark is shown in Table 5, containing figures from the official census.

TABLE 5.—*Number of pigs in Denmark.*[1]

| Date official census was taken. | Number of pigs. | Date official census was taken. | Number of pigs. | Date official census was taken. | Number of pigs. |
|---|---|---|---|---|---|
| 1837 | 235,000 | 1898 | 1,168,000 | July 12, 1917 | 1,651,000 |
| 1861 | 301,000 | 1903 | 1,457,000 | July 15, 1918 | [2] 621,000 |
| 1871 | 442,000 | 1909 | 1,468,000 | July 15, 1919 | 716,000 |
| 1881 | 527,000 | 1914 | 2,497,000 | July 15, 1920 | 1,008,000 |
| 1888 | 771,000 | May 15, 1915 | 1,919,000 | July 15, 1921 | 1,429,908 |
| 1893 | 829,000 | Feb. 29, 1916 | 1,983,000 | July 15, 1922 | 1,899,019 |

[1] Source: Det Statistiske Departement, Copenhagen. Years 1921, 1922, 1923 include north Slesvig. Official census figures for Denmark without the north Slesvig area were 1,007,866 in 1920; 1,327,268 in 1921, and 1,734,116 in 1922.

[2] Decline caused by cutting off of the importation of feeds by submarine warfare and the very small home-grain crop in 1917.

### IMPROVEMENT IN BREEDING BACON TYPE.

The great improvement in quality and type achieved in the Danish swine industry in the last 30 years has no parallel in any other country. Rather than go over to a new breed of the bacon type, the Danish farmer chose to improve the native breed to meet the demand of the English market. In the improvement of the native breed (*Dansk Landrase*) the aim has been twofold: To produce a quality of bacon satisfactory to the English market, and to retain thriftiness, prolificacy, and hardy characteristics demanded by the farmer. The native breed is a white hog of the bacon type—long, fairly fine bone and skin, well-developed muscles over back and belly, fairly good hams. (See fig. 11.) This breed is a very economical feeder and especially well fitted to the feeding conditions on the average Danish farm, where it reaches a live weight of a little over 200 pounds in

[27] Sorensen, S., Horsens Andels—Svineslagteri 1887–1912, 1912.

six to eight months. This size is much preferred on the British bacon market.

A few pure Yorkshire pigs are bred in Denmark, but Yorkshires are used mainly for crossing with the native breed. In the improvement of the native breed, great credit is due to State Counselor Peter A. Morkeberg, who originated and worked out a scientific and practicable system of improved pig breeding through the use of breeding centers. (*Avlscentrer*).[28] Early experimental work showed that the best bacon hog produced in Denmark for the British market was the first cross from a Danish native sow with an English Yorkshire boar. To practice this plan of pig breeding it was necessary to provide some means of keeping each breed pure. According to Morkeberg's plan, the individuals in each breed possessing superior fertility, quality of bacon, and economy in feeding are collected and bred in their respective breeding centers. These herds

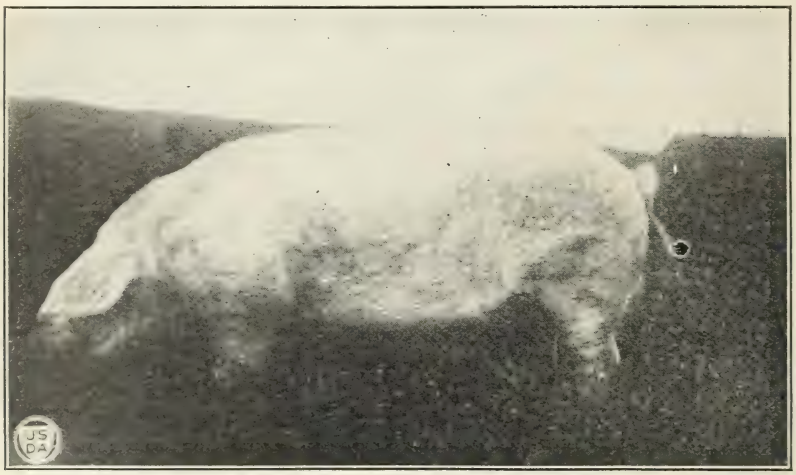

FIG. 11.—Danish bacon-type boar.

are controlled by the expert supervision of a special committee appointed jointly by the Government and the National Federation of Cooperative Bacon Factories. A small annual government appropriation helps to support the work. In 1922–23[29] there were 150 breeding centers for the native breed and 32 for the Yorkshire breed.

According to recent experimental investigations (*109 de Beretning fra Forsögslaboratoriet*, Copenhagen, 1922) conducted by the experiment stations, the Danish native pig now stands on a par, in quality of bacon, with the cross between the native and Yorkshire. This achievement must be accredited to the unique but scientific and highly practicable Danish system of pig breeding.

## THE COOPERATIVE BACON FACTORIES.

### CHARACTER AND DEVELOPMENT.

Cooperative slaughter plants have been established in other European countries, but nowhere has the movement met with a de-

[28] Morkeberg, P. A., Om Svineavlens Ledelsen i Danmark. 1901.
[29] Landökonomiske Aarbog for 1923, p. 48, issued by Det Kgl. Landhusholdnings Selskab, Copenhagen.

gree of success equal to that of the cooperative bacon factories (cooperative hog-slaughtering and bacon-curing plants) in Denmark. In some European countries the consumers have attempted to own and operate slaughter plants on a cooperative basis, whereas the Danish slaughtering enterprises are all controlled by producers. The Danish plants restrict their operations mainly to slaughtering hogs and curing bacon and slaughter only a small number of other kinds of livestock, chiefly for making sausage. In Norway, where 25 per cent of the livestock is slaughtered in seven cooperative plants owned by the farmers, these plants are built to supply a home market and to slaughter all kinds of livestock.

In Denmark the slaughtering industry is not centralized at the large markets as in the United States. The bacon factories are equally distributed more or less locally throughout the entire Kingdom (fig. 12). Each plant draws its supply of hogs from a limited

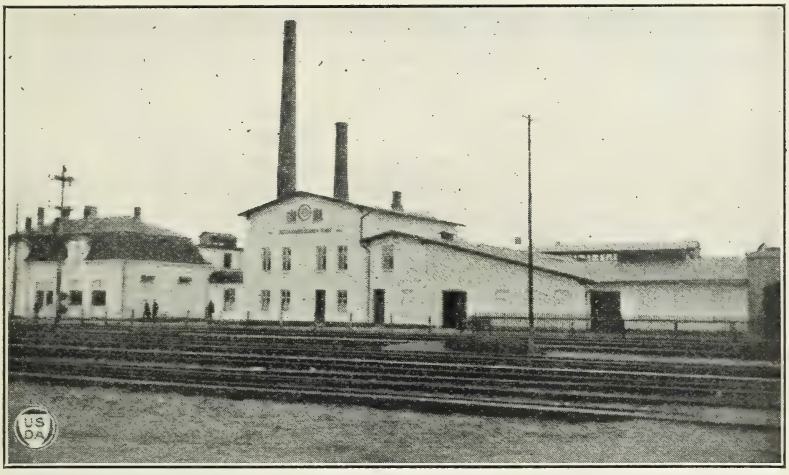

FIG. 12.—Cooperative hog-slaughtering and bacon-curing plant at Kjöge. There are 46 cooperative plants operating in different sections of Denmark.

territory. The average membership belonging to each cooperative bacon factory association is about 3,600 hog producers.

Cooperative bacon factories were built in different sections of the country to meet a market demand which came with the new system of agriculture. With the rapid development of the new dairy industry in the eighties large quantities of skim milk were returned to the farm and were utilized for feeding pigs. Although a few private bacon plants had already been erected, many sections of the country did not have available facilities for slaughtering. Consequently, it may not be said that this cooperative movement altogether replaced a former system of slaughterhouses already established. At this early date, the shipping of hogs to the few private plants was not satisfactory, because of the transportation problem and because of the wide margin asked by local hog buyers. Moreover, the private bacon plants experienced great difficulty in getting a sufficient number of hogs of the bacon type.

Whether a bacon factory was cooperative or not, the first and outstanding element of success was to secure a regular supply of

the high-quality, bacon-type hogs which the English market demanded. For this reason, the success of a killing and curing plant was almost wholly dependent on the producer. One great contribution which cooperation has made to the Danish bacon-factory industry is that the producer has become directly interested in producing and delivering the type of hog which the English market demands, and pays the best price for, and which consequently yields the greatest return to the producer.

These difficulties experienced in marketing hogs prompted the farmers in the vicinity of Horsens[30] to form the first cooperative bacon-factory association. Cooperative enterprises had already won the confidence of the farmers through the cooperative creameries. A factory was erected at Horsens, Jutland Peninsula, in 1887, with 1,218 members, and 24,000 hogs were slaughtered the first year. In 1915 the association had over 5,000 members, and slaughtered 88,000 hogs. In 1916, after 28 years of successful operation, the plant was rebuilt and now has a capacity of 3,000 hogs per week. The members are under contract agreement, bound to deliver their hogs to the factory and to guarantee necessary loans for a period of seven years. Although the loan for building capital is made for a 7-year period, the amortization plan is based on two 7-year periods. The members are jointly and severally liable for any deficit, and such deficit would be apportioned among the members according to deliveries. However, the members have never had a deficit to pay during the 36 years. If a member violates the delivery pledge, he is fined 10 Danish kroner ($2.68 at par) per hog.

The cooperative movement spread rapidly the first few years. By 1890 there were 10 cooperative plants. Farmers in the different sections of the Kingdom became eager to establish similar plants. Several of these early plants during the first years experienced considerable difficulty, largely because of the lack of sufficient hogs to operate at minimum cost and because of the scarcity of qualified men for managers. There were few leaders who understood the trade as well as the technical side of the bacon industry. This struggle retarded the erection of many proposed new plants in the nineties.

Since the beginning of the twentieth century the cooperative bacon factories have been established and operated on a sound basis; they have had sufficient volume of business and trained business and technical management. The decline in pig production in 1918–19 was a tremendous handicap to most plants, but this has been corrected as the supply of pigs has come back to pre-war basis. There are now 46 cooperative bacon plants, with 167,827 members. One of the cooperative plants is owned and operated by the Consumers' Cooperative Wholesale Society of England. In the meantime, the number of private plants has declined—there were 21 in 1912, but 5 of these have either gone over to the cooperative plan or have discontinued operation, as in 1923 there were only 16 small private plants.

The number of hogs slaughtered in Denmark has increased steadily until in pre-war years (1911–1914) 2,500,000 hogs were slaughtered annually in all the cooperative and private bacon factories. As

[30] Sorensen, S., Horsens Andels-Swineslagteri, 1887–1912.

indicated by Table 6, approximately 85 per cent of all hogs slaughtered are now slaughtered in the 46 cooperative plants.

TABLE 6.—*Hogs slaughtered in Danish bacon factories.*[1]

| Year. | Hogs slaughtered. | Cooperative bacon factories. | | |
|---|---|---|---|---|
| | | Plants. | Hogs slaughtered. | Total slaughterings. |
| | *Number.* | *Number.* | *Number.* | *Per cent.* |
| 1888 | (2) | 1 | 23,400 | (2) |
| 1890 | (2) | 10 | 147,500 | (2) |
| 1895 | (2) | 17 | 528,800 | (2) |
| 1900 | (2) | 26 | 675,200 | (2) |
| 1905 | (2) | 32 | 1,031,000 | (2) |
| 1907 | (2) | 31 | 1,307,120 | (2) |
| 1910 | (2) | 35 | 1,407,685 | (2) |
| 1912 | 2,423,564 | 41 | 1,922,828 | 79.3 |
| 1914 | 2,858,294 | 45 | 2,434,615 | 85.2 |
| 1915 | 2,593,549 | 46 | 2,169,559 | 83.6 |
| 1916 | 2,542,353 | 46 | 2,213,765 | 87.1 |
| 1917 | 2,479,431 | 46 | 2,155,542 | 86.9 |
| 1918 | 324,263 | 46 | 281,217 | 86.7 |
| 1919 | 456,385 | 46 | 407,254 | 89.2 |
| 1920 | 930,260 | 46 | 771,841 | 83.0 |
| 1921 | 1,641,194 | 46 | 1,402,728 | 85.5 |
| 1922 | 2,215,423 | 46 | 1,853,994 | 83.7 |

[1] Sources: Det Statistiske Departement and the central offices of the National Federation Danish Cooperative Bacon Factories, Copenhagen.
[2] Not available.

### UTILIZATION OF BY-PRODUCTS.

A sausage-making plant, usually operated on a comparatively small scale, is a part of each cooperative bacon factory. To utilize the by-products to best advantage, each plant slaughters a number of cattle, sheep, and horses. The cooperative plants operate their own retail shop uptown for disposal of by-products and some operate shops in larger towns, as well as distributing a large part of their sausages and meats direct to retailers in their respective membership territory. Plants near Copenhagen and the large provincial cities dispose of offal to private firms in these cities. Special parts of the offal are sold to chemical plants both in Denmark and Germany. Each plant is also equipped to manufacture the blood and bones into feeding cakes and commercial fertilizers.

### USUAL METHOD OF FINANCING.

The nature of the slaughtering process necessitates a comparatively large unit plant. The original outlay for erecting the plant, as well as the necessary operating capital, is much larger than for the cooperative creamery, because curing the bacon necessitates carrying the stock for a longer period. In the cooperative creamery the surplus earnings which accumulate throughout the year are kept largely as a savings deposit; in the cooperative bacon factory this surplus is used as operating capital. As the surplus earnings are returned to the members at the end of the fiscal year, it is usually necessary to borrow part of the operating capital required for the first six months of each new year.

The cooperative bacon factory associations are nonstock associations. The necessary fixed and operating capital is provided by a loan, which is guaranteed by the members of the association. So far as the creditor is concerned, the members are jointly and severally liable for this loan and for any other obligations incurred by the association. Within the association this guarantee sum is divided among the different districts (*sogn*) in proportion to the number of hogs pledged. While the membership in a cooperative creamery is local and each member is personally known by other members, the cooperative bacon factory association comprises a much larger territory. It was found that the farmers in each district were willing to enter into a joint guarantee with farmers in their local district, but were not willing to enter into a similar joint agreement with strangers in other sections of the territory. So it was necessary to divide the territory into local districts and to make the farmers in each district jointly liable for the district's share. However, within each district this liability may again be proportioned among the members according to the number of hogs delivered or pledged.

The membership's contract agreement holds for a definite period, usually 5, 7, or 10 years, and comprises two features: (1) Each member is pledged to deliver to the cooperative factory all hogs he produces, except those used for home butchering, breeding stock, and small pigs sold before 3 months old. In violation of this pledge he pays a penalty of 10 to 25 kroner ($2.68 to $6.70 at par) per hog; (2) members become joint guarantors for the loans which are executed by the association.

After providing for the amortization and reserve funds, the surplus is returned to the members in proportion to the slaughtered weight of hogs delivered during the year. The plant is owned by the current members. The property is valued at the beginning of each period and each member is credited with his share of the association's assets in proportion to the weight of hogs delivered during the last period. If a member withdraws at the end of the 10-year period, he or his heirs may be refunded at least two-thirds of the amount of his share. If a farmer turns his operations over to a new person, he may arrange to transfer his delivery agreement to the new person; but this does not release him from the guarantee obligation for the 10-year period, until the new party has been properly recognized by the board of directors.

### MANAGEMENT.

*General meeting.*—The members meet annually in a general meeting, when the financial statement is laid before them as well as other business concerning the association. Each member has one vote. Ordinary business matters are decided by majority vote in the general meeting. Changes in laws, or questions of the discontinuation of the factory, require two-thirds to three-fifths majority.

*Board of directors.*—The general supervision and management of the factory is handled by a board of directors which generally consists of 7 to 18 members elected for two or three years. Three methods are practiced in the election of the board members: (1) They are elected by the members at the general meeting; (2) the membership

territory is divided into several districts and the members in each district elect a board member—usually some board members are also elected at large; (3) a more recent method, practiced in some associations (which is common with other cooperative associations) is for a committee of representatives (Repräsentantskab) to elect the board of directors. In this method, also, the membership territory is divided into small district units and the members in each of these districts elect a representative. Sometimes more than one representative is elected, based on the number of members in the district or the number of hogs delivered. Each representative helps to stimulate the members' interest in the association by holding three or four meetings in his district each year, and serves as a practical connecting link between the members and the board.

The chairman of the board of directors is usually the only salaried man of this body; his salary may vary from $100 to $300 a year. The other members are granted an allowance for days on official duty.

*Manager.*—The board of directors chooses the manager, and other important personnel is placed with its approval. The manager assumes the daily management of the plant and takes charge of the selling. A technical and trade knowledge of the bacon industry are his essential qualifications. Aside from these, the choice is likely to be a man who is well liked by the farmers. The tendency in the past has been to place the greater emphasis on technical training, but the present trend is to favor the manager with strong business qualifications. In factories which sell cooperatively through their own centralized selling agency in London, business qualifications are less important and the technical man is usually chosen; whereas, in the factories which sell independently, the success of the enterprise depends in a large measure and in a more direct way upon the salesmanship and business ability of the manager. This fact is well recognized by many associations and some of the most enterprising factories have managers of the business type at their head.

*Auditors.*—The association elects two auditors at the yearly meeting, who audit the yearly financial statement and are required to audit the factory's financial affairs at least once a month. Some associations have turned this over to the State auditing officials.

### DELIVERY OF HOGS.

The common practice is to kill hogs three days each week. The greater portion, as high as 75 per cent with some factories, are hauled direct in wagon or truck from farm to cooperative factory, where they usually arrive on the morning of a killing day. In recent years hogs are collected by truck from the farms of members living at a distance. There is very little shrinkage in shipment or yards and no losses in dead hogs. Hogs are shipped from railroad stations on the days previous to killing.

Farmers are paid reasonable transportation money for hauling hogs direct to the factory. This transportation allowance varies with the distance. When the hogs are shipped, the factory pays the freight charges from the station to the plant, and a check for the receipts is mailed two or three days later to the owner.

BASIS FOR PAYMENT.

Each hog is marked with the owner's number by means of a tag placed in each ear. This tag remains on the hog during the killing, scalding, scraping, and singeing processes. The carcass is weighed with the internal parts removed, but with head and feet attached. The farmer is paid according to the weight of the carcass at this stage, which is termed "slaughtered weight." The loss from live to slaughtered weight is approximately 25 per cent. The slaughtered hog is classified according to quality. Then the tag number with the weight and quality classification is sent to the office where the number indicates the owner's name. The man who does this weighing is an authorized weigher, generally the assistant weigher to the Government-authorized weigher in each town. The weigher records the tag number and weight.

Number of Pigs Slaughtered in the Danish Bacon Factories—Monthly Averages, 1911–1914, 1921, 1922.

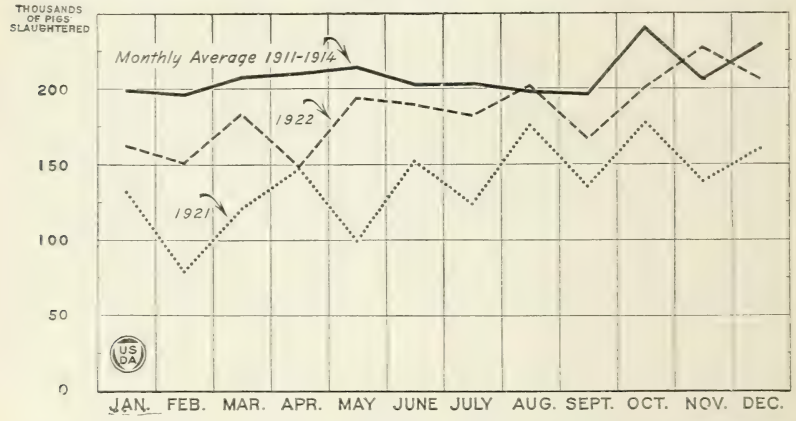


FIG. 13.—The fairly uniform flow of pigs to market in Denmark is indicated in the monthly averages in pre-war years. In 1911–14, the average monthly slaughterings in Danish bacon factories was 208,585 pigs. The Danish producers are gradually coming back from irregularity caused by the war conditions to the uniform level in pre-war years. Source: Statistiske Efterretninger No. 9, 1923.

*Farmers paid according to slaughtered weight and quality classification.*—The slaughtered carcass, weighing between 132 and 165 pounds (live weight between 176 and 220 pounds), furnishes the most desirable quality of bacon for the English market. That the producer of the bacon-type hog which fits this weight and quality requirement may receive the benefit of the premium bacon prices, all the Danish cooperative bacon factories require that the slaughtered weight of all hogs delivered must be between 132 and 165 pounds to bring the top price. A deduction of about 1 cent per pound on the total weight is made when the hog is either below or over the required weight. When more than 20 pounds over or below requirement, this deduction is increased to 2 cents per pound.

In pre-war years, the supply of hogs to the bacon factories was fairly uniform each week throughout the whole year. This uniform supply is well illustrated in Figure 13. It is of equal importance to the bacon trade and the farmer, that the supply of hogs to the factory be regular. The system of rational farming linked with cooperation

has helped solve this problem. To utilize the uniform supply of skim milk returned to the farm the year round, the pig production is uniform. When the hog reaches the required weight, the farmer finds it to his advantage to sell, regardless of whether the market is high or low. If he holds another week, expecting higher prices, he loses in the deductions because his hogs are too heavy. The practice of paying the top quotation only for hogs of a specified weight helps to maintain a regular supply and tends to stabilize the quotations.

If the factory is to yield the greatest returns, the farmer must supply the desired quality as well as the desired weight. Quotations are fixed for three classes based on quality, with a variation of about one-half cent per pound between each class.

*Weekly quotation.*—As previously stated, each member's hogs are classified according to weight and quality when slaughtered, and according to this classification a partial payment which is near the approximate market value is remitted to the owner and the remainder is returned to him at the close of each fiscal year. This approximate market value is determined through the weekly quotation, affixed by the cooperative plants, at the end of each week for the following week, by a special committee of three in each factory association. The manager, who is constantly in touch with bacon-market conditions, is usually the influential member of this committee.

Most of the cooperative factories in neighboring counties and in some cases in the entire Province agree upon one quotation. The actual prices paid for bacon on British markets, together with knowledge of market conditions and "feeling the market," serve as the basis in fixing the quotation. The factories aim to fix the quotation near actual value, but they also strive to maintain a stable quotation which is maintained at a remarkably steady level. Naturally, the private factories usually fix a quotation which is slightly higher than the cooperative factories. However, the latter return a patronage dividend to members at the end of the year.

### FEDERATION OF COOPERATIVE BACON FACTORIES.

Although the cooperative bacon factories function and operate independently, as early as 1897 they had formed a national service federation known as The National Federation of the Danish Cooperative Bacon Factories (*De Samvirkende Danske Andels Svineslagterier*). The federation maintains offices, with a secretary, in Copenhagen. It serves the common interests of the cooperative plants and the swine industry and represents the industry in other joint cooperative activities, which aid agriculture and the nation in general. Its activities embrace legislative matters affecting the swine industry, transportation, and market and labor problems. The federation has taken an active part in promoting improved pig breeding and has given financial aid to such experimental projects. Its activities are financed jointly by the cooperative plants which constitute its membership.

### MARKETING DANISH BACON.

The Danish law requires that the Danish bacon export trade be handled under the common registered trade-mark, "Lur Brand."

The carcass and offal are inspected by a government veterinarian in each factory and stamped with the official classification mark. Only the highest class bacon, from sound, healthy animals, free from tuberculosis or other diseases, can be stamped with the common trade-mark, "Lur Brand," in red, and only products bearing the red stamp can be exported. Bacon placed in second class is stamped in blue and may be used only for home consumption. The official registered trade-mark number of each cooperative factory must also be stamped on the products.

This trade-mark is a health guaranty rather than a quality mark. The high quality of Danish bacon is a standard voluntarily attained by the cooperative plants through local cooperative effort, and designed to meet as nearly as possible the demands of the English

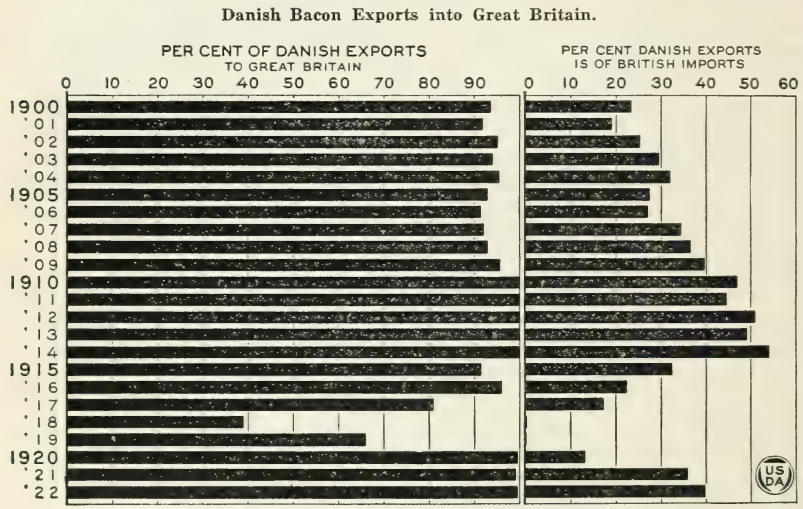


FIG. 14.—In normal times approximately 100 per cent of the Danish bacon exports are consumed in Great Britain. As the Danish bacon imports steadily increased before the World War, Denmark's share of British bacon imports increased proportionally. Denmark's proportion of bacon imports into Great Britain was 44.6 per cent in 1911, 51.1 per cent in 1912, 49.2 per cent in 1913, and 54 per cent in 1914. As fast as her bacon production is nearing the pre-war level, Denmark is regaining her pre-war share of British bacon imports. It was 39.8 per cent in 1922. Data based on Danish and British statistics. The term "bacon," as used in Denmark, refers to the Wiltshire cut. The bulk of Danish pork products is exported in this form.

bacon trade. One feature which is helpful in meeting the market demand and which also encourages select cutting and trimming, is the bacon-judging exhibitions. These exhibitions are held several times each year under the auspices of the National Federation of the Danish Cooperative Bacon Factories. They are usually held at the principal shipping port (Esjeberg), where samples from each plant are taken from the lots in shipment. The cooperative plants voluntarily participate in these exhibitions. A letter stating the results of the bacon judgings at each exhibition is sent to each plant, and the names of the plants whose bacon stands in the best upper third in the exhibition are publicly announced.

Approximately 85 per cent of the bacon output in the bacon factories is exported, practically all of which goes to Great Britain, as indicated in Figure 14. While the bulk of the Danish butter

shipped to Great Britain is consumed in the large industrial centers of middle and north England, three-fourths of the Danish bacon is distributed in south England and London.

Danish bacon is exported to England regularly each week in the form of cured "Wiltshire" cuts, sides with hams and shoulders attached. It is generally smoked by the English wholesalers before being distributed to the retailers. The average retailer is not equipped to smoke his bacon, but many of the large retail companies with a chain of stores operate their own smoke houses and these companies receive their bacon direct from the killing and curing plants in Denmark. Bacon is not stored in the Danish plants; as soon as the curing process is completed it is stacked and baled for immediate shipment.

There are no middlemen in Denmark connected with the export of bacon from the cooperative plants. In the beginning of the bacon trade to England each cooperative plant sold its output through an English agent. While 28 cooperative plants practice this method, the other 18 plants sell through their own cooperative enterprise in Great Britain.

### PLANTS SELL INDEPENDENTLY THROUGH AGENTS IN GREAT BRITAIN.

Three distinct steps are involved in marketing by cooperative plants in Great Britain: (1) The factory's representative or agent in Great Britain, (2) the British wholesaler, and (3) the British retailer. The cooperative plant which sells independently usually has one main agency in London and connections with agencies in smaller markets. These agents are usually Englishmen, although some of them are Danes who have lived in England for some years and are experienced in the British bacon trade. Some are old-established British bacon import agencies. They work directly for the Danish plants on a commission basis and keen competition exists among them.

Each agent is responsible to the Danish plant, whose bacon output he sells to wholesalers. He not only endeavors to build up a first-class trade with high-class wholesale houses but constantly advertises Danish products to new customers. To acquaint the British housewife with the quality of Danish products that she may become a regular buyer of Danish products, is the chief advertising aim. These factors stimulate the demand which strengthens the prices of Danish bacon. The nature of the market competition between agents centers on the quality of the products and dependability of supply. Thus, the agent of the factory that delivers the bacon which best suits the trade demand, can not only command the highest prices but can sell through the best trade channels.

Danish bacon distributed in London and south England, except that handled by the Danish Cooperative Bacon Trading Co., which is not a member of the exchange, is sold on the bacon exchange—The Home and Foreign Produce Exchange, Ltd., London. The agents representing the Danish cooperative bacon plants meet with the English wholesale trade daily on this exchange, although the principal market days are Mondays, Wednesdays, and Fridays. The exchange issues an official market report on Fridays; the prices therein are a record of sales on Thursdays, and up to the time

of publishing the report on Fridays. The exchange does not attempt to fix prices.

This exchange furthers the protection of both the sellers' and buyers' common interest and maintains fair trade practices. An agent operating on the exchange must assume the responsibility for collections on his sales, while in selling direct to the British retailer or wholesaler a Danish plant assumes this and other trade responsibilities. Although this association or exchange executes certain trade policies, it does not exercise any monopoly or restraint in the Danish bacon trade.

The Danish factory notifies its agents of the amount of bacon available for British trade each week. The first of each week the agent canvasses his regular customers for orders and secures new buyers if his supply permits. The agents communicate the orders to the factory and shipments are consigned direct to the wholesaler's trade, or the bacon is shipped to a forwarding agent's warehouse in London or some other receiving port and is distributed from this point according to the agent's instructions. The bulk of the Danish bacon is consigned direct from the factory to British wholesale provision houses, and the remainder is either shipped f. o. b. to retail companies or consigned to import agencies.

Most plants have a large number of regular customers (wholesale and large retail companies) who have been buying their product for many years. The consumer demands, through the retailer, the exact grade and cure of bacon that a certain factory supplies. To provide for this demand, many British wholesale houses receive regularly weekly consignments from the Danish cooperative plants. This direct connection with hundreds of British wholesale provision houses who supply through the retail shops in their respective territory the regular British consumers of Danish products, encourages a healthy state in the Danish bacon trade.

Among the cooperative plants selling bacon independently, two or three factories sell direct to the retailer. The manager of one of the most enterprising plants sells his weekly bacon output, f. o. b. basis, direct to British retailers. His weekly production is distributed among 80 to 100 retail customers on the British markets, most of whom operate from a few to perhaps 25 stores. The factory maintains three representatives in Great Britain. Although the factory has established some direct sales (standing weekly orders) to retailers, the bulk of the orders are secured by the British representatives each week and communicated to the factory which ships direct to the retailer. This type of marketing is a simple, direct method where supply and demand between producer and consumer is comparatively stable. It displays trade confidence to a high degree.

### COOPERATIVE BACON WHOLESALE AGENCY IN ENGLAND.

Danish producers began to engage in the wholesale bacon trade in England in 1902 when three cooperative bacon plants established their own sales agency in England. Their aim or motive was to break away from the old established trade-form, to eliminate the British agent and to consign their bacon direct to their own sales agency, which would perform the services of both the agent and wholesale house and distribute direct to the retailer. The sales

scheme won the confidence of the Danish producers, and by 1906 eight cooperative plants had joined the agency. This sales organization has since been reorganized and now is known as the Danish Cooperative Bacon Trading Co. (Ltd.), London, incorporated under the English laws. It is owned cooperatively by 18 Danish cooperative bacon factories which are under contract for the membership period to consign their weekly export bacon output to this sales company, which executes the trading service for its members' products in the British markets. It owns and operates its own offices, warehouses, and trucks in the principal markets and is equipped to smoke the bacon before it is distributed to the retailers.

The English provision wholesalers handle a wide range of food supplies, including groceries, dairy products, and American lard, as well as Irish, Canadian, American, and Danish bacon. The Danish Cooperative Bacon Trading Co., selling only Danish bacon, soon experienced some difficulty in disposing of all its bacon direct to retail shops. The nature of the retail trade demands forced the retailer to seek trade connections with wholesale houses that could supply him with other bacon brands, American lard, etc. The Danish Cooperative Bacon Trading Co. thus broadened its field of activities and now trades in other provisions. The company is not always able to dispose of its entire bacon supply to the retail trade, but often sells the remainder to other wholesale houses. In this kind of transaction the wholesale company in reality performs only the services of the agent, passing the bacon on through the English wholesaler.

A just criticism in the Danish cooperative bacon factory industry is the lack of cooperation among the plants to provide business statistics for conducting scientific research investigations in the management of each plant and the different types of selling. In fact, each cooperative plant uses a different bookkeeping system to avoid chance for comparison. Even among the leaders of the cooperative plants no material is available which might be used to determine whether the plant selling through the cooperative wholesale enterprise or the plant selling independently brings the greater returns to the producer.

The cooperative wholesale selling agency in England is a most influential factor in the Danish bacon trade, although it handles a little less than one-third of the Danish bacon export trade. It has introduced new marketing practices and trade principles; created a healthier brand of competition, which has effected greater efficiency in the market channels of the private enterprises; and lowered the rate of commission formerly charged by British agents for their services. The portion of the products handled by the producers' cooperative selling association in the trade is sufficient to prevent any market monopoly which might tend to restrain the natural trade conditions fixed by supply and demand. The influential position of the Danish Cooperative Bacon Trading Co. in the trade prevents any chance for monopolized price-fixing by speculative sources. This healthy state of trade and greater marketing efficiency are the contributions of cooperative selling effort to the whole Danish bacon trade.

## EGG INDUSTRY AND COOPERATION.

### CHARACTER AND GROWTH.

Eggs now form the third side of the triangle of Denmark's important agricultural exports. The medium-sized flock of 40 to 150 hens on the usual Danish farms gives the industry its national importance.[31] Especially of late years, poultry keeping has won favor with the smaller farmers (small-holders) and now constitutes an important part of their farm income.

That the Danish egg export rose from an annual surplus export of 365,000 cases of eggs in the early nineties to over 2,020,000 cases in 1922 reflects its remarkable development. This industry held its own fairly well during the World War and exports were only

Danish Egg Exports into Great Britain.

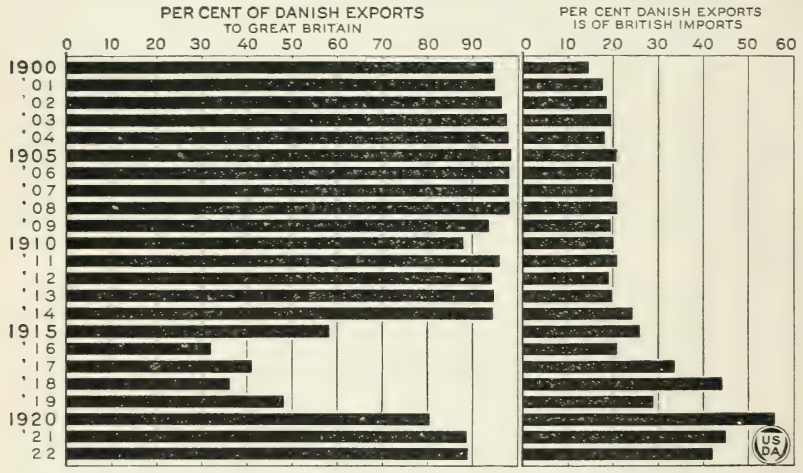


FIG. 15.—Great Britain is the principal foreign market for Danish eggs. Denmark's share of the British egg imports was approximately 20 per cent in pre-war years. The increase in Danish egg exports since the war has swelled Denmark's proportion of British egg imports to 55.8 per cent in 1920, 44.9 per cent in 1921, and 42 per cent in 1922. Data based on Danish and British statistics.

slightly below normal the last year of the war. Since the war, the growth of the export trade in eggs has been sensational. In 1920, the export value of Danish eggs surpassed that of bacon, ranking second to butter, and in 1922 the Danish egg export was 62 per cent above the pre-war level of 1913.

The compelling interest in the Danish egg trade is export for the British markets. The importance of Danish eggs in the British egg trade is illustrated in Figure 15. In 1922, 1,800,000 cases, or 88.9 per cent of the Danish egg export, went to Great Britain; this constituted 42 per cent of the British egg import. Next to Great Britain, Sweden and Norway are the largest users of Danish eggs. This unique progress in the Danish egg industry during the last

[31] Official Census, Danmark's Statistiske Departement, Copenhagen: 1893, 5.9 million fowls in Denmark; 1914, 15.1 million fowls in Denmark; 1922, 19.1 million fowls in Denmark.

30 years is largely attributed to the trade improvement effected by cooperative marketing.

### EARLY MARKETING PROBLEMS.

Since the beginning of the egg export, the marketing problem has been a live one. The early export trade with Great Britain in the last half of the nineteenth century was not a success. The eggs were of poor quality, not dependably graded, and the supply was irregular, all of which resulted in low prices to the producers. To bring a dependable supply of fresh eggs on the British markets was the problem which constantly confronted merchants and exporters. In 1895 the idea of marketing eggs through cooperative channels began to arouse interest among farmers and the development of this method of marketing has had a tremendously beneficial influence upon Danish egg production and trade during the last quarter-century.

### PRESENT MARKETING SYSTEM.

The three common channels through which Danish eggs are now marketed are (1) the Danish Cooperative Egg Export Association, (2) the cooperative bacon factories, and (3) private merchants.

The Danish Cooperative Egg Export Association (*Dansk Andels Aegexport*) began its activities in 1895,[32] with 25 local egg-collecting associations, with a membership of about 800 egg producers. The second year, its membership comprised over 200 local associations. At the end of 25 years' operation, the central association had 540 local associations with approximately 50,000 members. In 1922, the membership reached 550 associations and the central association handled 13,510,869 pounds (approximately 275,000 cases[33]) of eggs at a value amounting to 14,701,500 kroner. Between 15 and 20 per cent of its eggs handled annually are sold on the home market, largely to the wholesale trade. In 1922, the central association exported 11,362,998 pounds (approximately 230,000 cases) of eggs and this represented 11.2 per cent of the total export of Danish eggs.

From a small beginning 28 years ago, this association has gradually developed to be a most powerful and influential enterprise in the Danish egg trade. With its rigid control in collecting eggs from the producers and guaranteeing the consumers fresh, high-quality eggs, the Danish Export Association soon created a favorable market demand for its eggs, both at home and in Great Britain, which eventually resulted in better prices. Its standardized products marketed through efficient distributive channels, return a larger share of the consumer's price to the producer than before the days of cooperation. Table 7 illustrates both the association's sound growth and the gradual increase in prices obtained for its eggs. Cooperative marketing has revolutionized the whole Danish egg trade and changed egg production in Denmark from a precarious, unprofit-

[32] Kock, W. A., Dansk Andels Aegexports Virksomhed i 25 Aar, 1895–1920. Published by Dansk Andels Aegexport, Copenhagen, 1920.

[33] Figured on the basis of 360 eggs to the case.

able business to a prosperous industry possessing a fair degree of stability.

TABLE 7.—*Danish Cooperative Egg Export Association's volume of business and average price reached for eggs handled.*[1]

| Year beginning January 1. | Pounds, eggs. | Value in dollars.[2] | Average price obtained per pound of eggs.[2] | Year beginning January 1. | Pounds, eggs. | Value in dollars.[2] | Average price obtained per pound of eggs.[2] |
|---|---|---|---|---|---|---|---|
| | *Thousands.* | *Thousands.* | *Cents.* | | *Thousands.* | *Thousands.* | *Cents.* |
| 1895 | 209 | 21 | 10.2 | 1909 | 9,519 | 1,224 | 12.9 |
| 1896 | 1,863 | 188 | 10.2 | 1910 | 9,857 | 1,226 | 12.3 |
| 1897 | 3,552 | 348 | 9.6 | 1911 | 10,033 | 1,295 | 12.9 |
| 1898 | 4,204 | 442 | 10.5 | 1912 | 9,923 | 1,331 | 13.4 |
| 1899 | 5,503 | 588 | 10.7 | 1913 | 10,426 | 1,450 | 13.9 |
| 1900 | 6,160 | 682 | 11.0 | 1914 | 10,348 | 1,499 | 14.5 |
| 1901 | 8,139 | 894 | 11.0 | 1915 | 10,644 | 1,952 | 17.3 |
| 1902 | 9,934 | 1,086 | 11.0 | 1916 | 10,243 | 2,650 | 25.8 |
| 1903 | 9,797 | 1,089 | 11.0 | 1917 | 9,535 | 2,763 | 28.9 |
| 1904 | 9,134 | 1,036 | 11.5 | 1918 | 6,116 | 2,874 | 47.1 |
| 1905 | 9,696 | 1,130 | 11.8 | 1919 | 6,676 | 3,138 | 46.9 |
| 1906 | 9,694 | 1,177 | 12.1 | 1920 | 9,114 | 3,235 | 35.5 |
| 1907 | 9,841 | 1,224 | 12.3 | 1921 | 10,880 | 3,070 | 28.3 |
| 1908 | 9,709 | 1,164 | 11.8 | 1922 | 13,510 | 3,077 | 22.8 |

[1] Source: Dansk Andels Aegexports Viksomhed i 25 Aar, 1895–1920—W. A. Kock, p. 35, and the year books of Andelsbladet, p. 613, 1921, p. 745, 1922, and p. 500, 1923.

[2] Conversions at par of exchange prior to 1914, thereafter at prevailing average rates of exchange as quoted in table on inside cover page.

Strong centralization is one of the outstanding characteristics of Danish cooperative egg-selling activities. The eggs come from medium-sized flocks, and the value of the egg production per farm is comparatively small. The single producer can not afford to devote much time and energy to the selling end. Even in the local association, the value of the combined egg production from its members does not represent a relatively large capital, and would hardly justify the employment of highly-trained salesmen. The local associations do not operate independently, but are rather what may be termed auxiliary suppliers to the one central association. This form of organization relieves the producer and the local of the responsibility of selling. On the other hand, if the central association is to handle the selling of thousands of small units from members, it must have some assurance of the regularity of this supply as well as its quality. The producers guarantee this supply by promise to deliver all of their eggs to the local association, which in turn is under contract agreement to deliver its total supply to the central association.

Another prominent characteristic of this form of organization is the strict, almost perfect, regulation as to quality. In its ability to demand the best quality product from the producer and to get it, the central organization surpasses similar cooperative selling societies in other European countries, and has made possible two outstanding accomplishments in the Danish egg trade: (1) Improvement in the quality of the egg production, resulting in a quality-egg export trade, and (2) steady increase in price paid for Danish eggs and the return of a larger share of this price to the producer.

The marketing of Danish eggs through cooperative associations was initiated in the formation of the Danish Cooperative Egg Export Association (*Dansk Andels Aegexport*—commonly known as the

D. A. E.) in 1895. During the first years its activities were largely restricted to the Jutland province, but it soon spread a network over the country. It is now a centralized selling organization that embraces the whole Kingdom.

This national scope in cooperative egg selling was aimed at in the beginning. The D. A. E.'s point of contact with the egg producers is through local egg-collecting associations, of which there are now 550 directly affiliated with the central association. The local associations must submit to and are obligated to obey the rules and regulations of the central association. If contract agreements are violated by any local association or individual producer, the party may be excluded from the central association by its board of directors.

FORM OF ORGANIZATION.

*Central association.*—For the first five years the headquarters of the association were in Vejle, Jutland Province, but since 1900 the

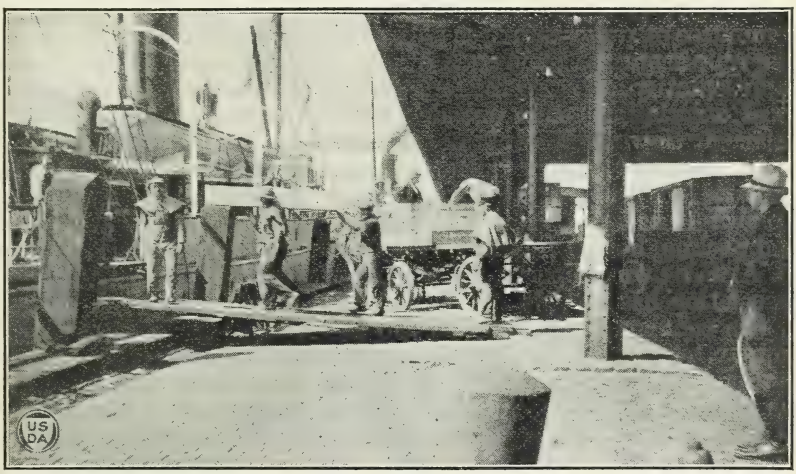


FIG. 16.—Loading Danish eggs packed in standard cases at Esbjerg, for shipment to British markets.

central offices have been at Copenhagen. In addition to large packing houses at headquarters, the central association has established branch packing houses in 10 provincial towns throughout the Kingdom. The eggs collected by the local egg-collecting associations are sent to the nearest packing house, where they are examined, sorted, graded, and packed for shipment (see fig. 16). The popular crates contain 960 and 1,440 eggs. The 1,440-egg crate is considered the standard size. The central association, at its Copenhagen headquarters, handles the selling and directs the shipment of eggs from the different packing houses.

The chief aim of the Danish Cooperative Egg Export Association is to create the best possible foreign market for Danish eggs by guaranteeing to the buyer that all eggs delivered by the association are fresh and of high quality. Several central packing houses are equipped with concrete tanks for preserving eggs and with facilities

for the fattening and selling of members' poultry. Generally, eggs placed in preserving tanks in the spring season are already contracted for by British buyers for fall and early winter delivery, and when marketed their crates are properly marked as "Pickled Eggs."

The Danish Cooperative Egg Export Association is controlled by a board of directors, consisting of five members, elected by the delegates at the annual meeting of a general assembly which comprises the board of directors, a committee of representatives, and one delegate from each local association. Only the delegates have voting privileges.

The chairman of the board of directors is elected for a period of five years; the other four members are chosen for two years. The executive business committee consists of three members—the board chairman, the association manager, and one other member of the board. The chairman of the board of directors receives a small salary; other members are allowed expenses when engaged on official duty.

Between the board of directors and the local associations is the committee of representatives (*Reprasentantskabet*), which consists of one representative from each county in the Kingdom. This county representative is elected for four years at a county meeting where each local association sends one delegate. The representatives are not salaried; they receive only expenses when on official duty.

At first, the central association leased buildings for offices and packing houses, but after a few years of successful operation it built its own branch packing houses. Now the Copenhagen central offices and packing houses, together with four branch establishments, are the D. A. E.'s own property. This property is paid for and the central association has no debt.

The common trade form in the Danish egg trade to England is similar to that of the Danish butter trade. Danish eggs are commonly sold f. o. b. to English provision wholesalers and large retail companies. The Cooperative Egg Export Association has its agents in different sections to place orders with the wholesalers. The association also sells to the wholesale and retail trade at home.

The contract agreement between the central association and its local association members involves two important features: (1) The local egg-collecting association under contract is bound to deliver all eggs gathered from its members direct to the central association. This delivery pledge holds for one year at a time. (2) Each local association is liable to the central association only to the extent of its part or share of the reserve fund held by the central association.

As with the creameries and bacon plants, the necessary capital was created by loan rather than by selling shares. The first few years the central association worked under great handicaps with the scarcity of capital; the payment to members was often delayed until their eggs were sold. Although comparatively less fixed capital is required than with the creamery or bacon plant, the central association requires large sums of operating capital. It has provided its own finances by building up large reserve funds. Such reserves, held by the central association, are now of sufficient size to provide the necessary operating capital, and interest is still drawn on a large part of it. These reserve funds, together with its property, give the

central association ample security to finance its own business activities.

*Local egg-collecting association.*—The members of the local egg-collecting association are bound to the central association through the local organization. The membership may vary from 10 to several hundred egg producers. Each member by contract obligates himself to deliver his total egg production, except eggs needed for home consumption and hatching. Eggs must be laid by members' own hens and gathered from the nest daily in winter and twice or thrice a day in summer heat. Eggs must be clean and fresh, and never over 7 days old when delivered.

Each egg delivered to the central association can be traced to the producer through the stamping system, which is strictly enforced. The central association gives each local egg-collecting association a registered number, and each individual member within each local association receives a number. Stamps are furnished individual members, and when the egg collector gathers the producer's eggs the two numbers (producer's and local association's) must be stamped on each egg. If bad eggs are discovered, the producer must refund the payment for such eggs and pay a fine equivalent at par to $1.34 per egg for the first and $2.68 for the second offense. This fine is divided equally between the central and local associations.

The capital needed in the local association is provided for by the association's own members through a loan, for which the members guarantee and assume joint liability. The local association must supply its egg collector with money, so that each member may be paid at the time eggs are gathered.

All Danish eggs are purchased according to weight. The central association fixes a weekly egg quotation, which represents a figure near the current market value, for the whole country. This quotation is the partial payment remitted to the local association at the time of delivery. The central association pays transportation from the local association collecting station to its nearest warehouse. At the close of each fiscal year the net surplus earned by the central association is divided among the members according to the weight of eggs delivered. The surplus distributed in patronage dividends was approximately 2½ cents per pound of eggs in 1919; 3½ cents in 1920; 1¾ cents in 1921; and 2 cents in 1922. Only half of each member's surplus is actually paid to the local association; the other half is retained in the central association's reserve fund to be used as operating capital but is credited to each local association. Each local association is annually paid 4½ per cent interest [34] on its share of this reserve fund.

Each local's liability to the central association is limited to its share of the reserve fund held by the central association. While joint liability is willingly agreed to in the local cooperative units, where the members are all acquainted, it has not proved practicable in a large central association whose activities extend beyond the local unit.

*The egg collector.*—The local egg-collecting association must gather the members' eggs at a local station, where they are shipped

[34] Andelsbladet No. 28, 1922, p. 744. Interest on reserve fund raised from 4½ to 5 per cent at general meeting, 1922.

to the central association. Some local associations have their members deliver their eggs to a cooperative consumer store, but this is usually not the most satisfactory way. The common practice is for the association to employ an egg collector, who, with his horse and wagon, gathers each member's eggs at least once and usually twice a week. The larger local associations may have several egg collectors on different routes in their membership territory. Local associations located near one of the branch houses of the central association have the egg collector deliver eggs to this point. The common practice is for the local association to pay the egg collector a fixed sum per pound for eggs collected. The egg collector pays to the member for all eggs gathered a price fixed by weight by the local association, based on the weekly quotation issued by the central association. The local association supplies its egg collectors with egg boxes. Eggs are sent in these boxes to the central association's packing houses.

### COOPERATIVE BACON FACTORIES COLLECT AND EXPORT EGGS.

Besides the Danish Cooperative Egg Export Association, several cooperative bacon factories sell eggs along cooperative lines. The egg producers within the territory of the bacon factory organize into a cooperative egg export association, which is placed under the management of the bacon factory. The membership in the egg association and its financial affairs are distinctly separate from those of the bacon association, although most members belong to both. In other words, the management of the cooperative bacon factory undertakes to collect its members' eggs for export under a special department organized and operated for this purpose.

The system of control, which guarantees the consumers a fresh quality product, is similar to that of the Danish Cooperative Egg Export Association. The principal difference is that, with the egg association of the bacon factory, the producers are direct members of the association, as the membership is restricted to a limited territory, and the association collects its eggs direct from the members. The D. A. E. pays the local association the fixed quotation, since the local must arrange for collecting the eggs from its members. The egg association of the bacon factory fixes a quotation, which is paid to the producers, and the association employs the egg collectors sent out direct from its headquarters to gather the members' eggs and bring them direct to the plant. The surplus at the end of the year is returned to the members in proportion to total weight of eggs delivered, and any deficit is divided on the same basis. The members are jointly and severally liable. The D. A. E.'s quotation is slightly higher, but that is not the actual price paid the producers, as the members must stand the cost of collecting the eggs.

The principal sale is through export. The bacon-factory management usually sells the eggs to the British wholesalers and to a few large retail companies who buy its bacon. The British wholesale provision trade deals in eggs as well as bacon, which affords the bacon plant's manager a direct business connection with British egg buyers. The cooperative bacon factories collect only stamped controlled eggs and are consequently in a positon to furnish their

British customers with guaranteed quality eggs and to return to the producer a high price.

Naturally, the cooperative egg-collecting associations of the bacon factories constitute a strong competitor to the Danish Cooperative Egg Export Association, but they do not usually operate in the same territory. Only seven cooperative bacon plants engage in egg collecting and exporting. According to the information supplied by the office of The National Federation of the Cooperative Bacon Factories, these seven plants exported, in 1921, 175,121 cases, or 9.7 per cent of the total export of Danish eggs that year.

### EXTENT OF COOPERATIVE EGG SELLING.

Although more than four-fifths of the Danish farmers belong to the local cooperative associations of creameries and bacon factories, only about one-fifth of the farmers belong to the local cooperative egg-collecting associations. Official surveys indicate that the cooperative egg-selling movement gained favorable support during the first years of operation but has remained at this level for the last two decades.

Two different official surveys of the agricultural cooperative movement were conducted by the State statistical department in 1903 and 1909.[35] In 1903, 20 per cent of the farmers belonged to some kind of local cooperative egg-collecting association, but, in 1909, while the investigation showed an increasing membership in both the cooperative creamery and bacon factory, the cooperative egg-selling movement remained practically the same. At that time only 18.2 per cent of the farmers with poultry belonged to local egg-collecting associations. These members owned 26.7 per cent of the poultry of the country. No similar official investigations have been made during the last decade, but the volume of eggs collected and exported by cooperative associations would indicate that about one-fifth of the Danish export egg trade is handled through cooperative egg associations. According to previous figures given, (see pages 41 and 53), 20.9 per cent of the total export trade of Danish eggs is now handled by cooperative associations.

### PRIVATE MERCHANTS.

The Danish merchants buy and export eggs through the usual marketing scheme. The local village storekeeper buys the farmers' eggs, which in turn are gathered by the merchants. Some supply the home market and the remainder are exported through the usual trade channels. The merchants and exporters have been forced indirectly to urge and demand eggs of good quality, especially for the export trade.

Cooperative egg-collecting and selling activities have brought about great improvement in Danish eggs for export. They have forced the private merchants to pay higher prices, and the merchants in turn have demanded more careful selection of eggs for quality and grade and they have been compelled to exercise care in collecting eggs direct from producers. Although their collections are not

[35] Statistiske Meddelelsers, 4 Räkke, 22 Bind, 5 Häfte and 4 Räkke, 36 Bind, 4 Häfte, published 1906–1911.

supervised in such complete detail as is done by cooperative associations, private merchants through their local egg-collecting activities have brought about great improvement in the trade.

## COOPERATIVE CATTLE EXPORT ASSOCIATIONS.

### DENMARK'S SURPLUS MEAT PRODUCTION.

Milk production is the predominating factor in the Danish dairy industry, but it is accompanied by a large meat production, chiefly made up of calves, undesirable young heifers and bulls, and discarded and old cows. The two popular native Danish dairy breeds are dual purpose in character. Meat production occurs throughout Denmark, but is more important on the Jutland Peninsula and especially west and southwest Jutland, where the lowland marshes make good grazing. The Shorthorn breed, imported from England, has gained in popularity in this section during the last 20 years.

Denmark has more cattle per thousand inhabitants than any other country on the European continent.[36] In pre-war times, besides supplying the meat consumption of the nation, Denmark exported a surplus of 150,000 to 180,000 head of cattle annually. In 1913, Denmark exported 152,000 head of cattle and 33,300,000 pounds of meat. Before the World War, Germany was the chief market. Then the average weekly export to Germany was between 2,000 and 3,000 live cattle. During the last two or three years, considerable difficulty has been experienced in disposing of surplus cattle. The depreciated German mark has almost prohibited cattle export there. However, the scarcity of meat in other countries on the continent has at times opened new markets. During the last two or three years, Denmark has sent cattle for slaughtering to Germany, Belgium, France, Switzerland, Italy, Czechoslovakia, and Norway. Such exports to foreign countries have been irregular and often seriously handicapped by a series of Government import restrictions enacted by several European nations.

Cattle slaughtering in Denmark is usually for home meat consumption only. It has been more desirable to export cattle on the hoof to Germany and other countries on the Continent than slaughter at home and export the meat. The packing and transportation facilities for meat have not been satisfactory and under normal conditions the live cattle brought larger returns. During the winter months, especially in recent years, some cattle are butchered in Denmark and the meat shipped to England and continental European countries because of import restrictions in live cattle.

### DANISH CATTLE MARKETS.

Cattle are exported through several markets, generally in seaport cities. Each market center may have one or two market days each week. The principal cattle market cities are Esjberg, Aalborg, Holstebro, Odense, Copenhagen, and Nyköbing, F. Farmers living near one of these market centers drive cattle in, while those at distances from market centers ship them by railway.

[36] Annuaire International de Statistique Agricole, 1913 et 1914. Rome.

With this large surplus meat production cattle export is of vital importance to Danish farmers, ranking next to butter, bacon, and eggs. Cooperative effort is active in this field to find the best possible foreign markets and effect greater economy in marketing the surplus cattle.

### THE COOPERATIVE CATTLE EXPORT ASSOCIATIONS.

The first cooperative cattle export association was organized in 1898, but the movement has attained its present development within the last 12 to 15 years. In 1922 there were 16 cooperative cattle export associations with an aggregate membership of about 25,000 farmers. A survey of the volume of business handled by the different associations in recent years indicates that these associations now handle annually between one-fourth and one-third of the Danish cattle export.

The majority of these associations are formed on the Jutland Peninsula. According to official statistical survey,[37] there is a tendency for the membership to come from the larger farms. Each association functions and operates independently. The associations whose cattle are brought to the same market often combine their export shipments to foreign buyers. Although the 16 associations operate independently, they have formed one national federation, the National Federation of Danish Cattle Export Associations (*De Samvirkende Danske Andels-Kreatureksport Foreninger*). The purpose of this federation is to promote the common interests of the cattle-export business rather than to do actual trading.

#### Form of Organization.

The form of organization in the different cooperative cattle-export associations is similar. They are usually organized in different sections of the Kingdom and only around the edges may their memberships overlap. Membership is open to all farmers and there is no fee or initial charge. Each member is by contract obligated to the association in two ways. (1) He is pledged to deliver all his surplus export cattle to the association for a definite period, usually three years. If this pledge is violated, the member must pay a fine to the association, usually 10 per cent of sales price. (2) Necessary operating capital is raised by bank loan against the membership's guaranty. Members are jointly and severally liable for any deficit incurred by the association.

The board of directors comprises seven to nine members, elected by the members at the annual general meeting. This board engages the manager, who is a highly qualified, expert cattle buyer, and he assumes complete charge of the association's business.

#### MARKETING PRACTICES.

Each member's registered number with the association is placed on the animal when shipped to the market. At the market the manager takes complete charge. Each animal is appraised by the manager and two other experienced cattlemen elected by the association. The

[37] Statistiske Meddelelser, 4 Räkke, 36 Bind, 4 Häfte. 1911, p. 34.

value affixed by this committee on each animal is based on market prices and classification, and this amount is remitted to the owner immediately. Generally 1 per cent of the valuation is retained by the association to cover any incidental damages or losses in export transit.

After appraisal, the manager is free to dispose of the cattle as he thinks best. He may export to foreign buyers, sell direct to exporters, slaughter at municipal slaughterhouses and export the meat, or sell to home butchers. Export is the principal method of sale. The cattle are usually consigned to regular customers in foreign countries, which may be slaughterhouses or cattle importers. The association's manager often sells to better advantage to foreign buyers than a private buyer can do, because of the large number of cattle at his disposal.

Any surplus in the association's business at the end of the year is divided among the members in proportion to value of cattle delivered. A deficit would be divided in the same way. A part of this surplus (usually one-fourth) is retained for a reserve fund which provides the necessary operating capital after a few years' successful operation. The success of this form of selling organization, aside from the members' loyalty, depends largely upon getting a capable manager, who is the association's chief salesman.

## COOPERATIVE BUYING.

Cooperative buying among the rural population has been extensively developed in Denmark in the purchasing of both household necessities and agricultural supplies. The volume of business handled by cooperative purchases for the year 1921–22 amounted to 314,300,000 Danish kroner ($59,761,945 at exchange), of which more than half, or 179,600,000 kroner ($34,149,683), represented the cooperative wholesale purchasing of household necessities, while cooperative purchasing of farm supplies, such as feeds, fertilizers, seeds, machinery, cement, and coal through associations, amounted to 134,700,000 kroner ($25,612,262).

### COOPERATIVE CONSUMERS' STORE SOCIETIES.

The cooperative consumers' store movement in Denmark is unique, in that, although chiefly a rural development, it has attained the largest proportional development of any European country. According to statistics for 1921, 11.17 per cent of the population in Denmark hold membership in the cooperative stores. The Republic of Finland ranks second, with 9.86 per cent of its population among the members; and England and Scotland, the birthplace of the cooperative store, have 9.48 per cent. The consumers' store, which originated with the Rochdale weavers in 1844, has developed largely among industrial workers not only in the United Kingdom, but in all western European countries, except Denmark. Early efforts in Denmark with the consumers' store were made by the city working classes, but the Danish movement became a rural development with four-fifths of the membership in the rural districts.

In the early fifties, several attempts at cooperative distribution of household necessities were launched at different times among the

labor classes in Copenhagen; but the birth of the present cooperative consumers' store movement in Denmark dates back to 1866, in the small town of Thisted, in northwest Jutland.[38] A clergyman, Rev. Hans Christian Sonne (1817–1880), had made a study of the consumers' stores organized in England on the Rochdale principles. In studying the problems of his parish he felt that the depressing economic condition was a serious handicap to the spiritual life, among the poorer working class. With a new program in mind he told them about the cooperative stores in England. This work resulted in the organization of the Society of Workingmen in Thisted Town, which was the first consumers' society in Denmark for cooperative distribution of the necessary supplies for its members. This society, which is still in existence, established the fundamental principles of cooperation observed throughout the development of the Danish movement.

The first consumers' stores struggled for existence. Few people understood the real motive and meaning of cooperation. Members often failed to buy at their own stores. The movement gained but little progress the first two decades and that largely with the working classes. In the late eighties, when the cooperative creamery had won the farmers' confidence, the farmers began to support the consumers' store and it became a rural development. Only in recent years has the movement gained ground in the cities. This development is well illustrated in the official investigations made in 1914 and 1919, as shown in Table 8, which also shows the year the existing societies were founded.

TABLE 8.—*The cooperative consumers' societies in 1914 and 1919.*[1]

| Year present existing societies were founded. | 1914 | Number of societies, 1919. | | |
|---|---|---|---|---|
| | | Cities. | Rural districts. | Total. |
| Before 1870 | 21 | 2 | 17 | 19 |
| 1870–1879 | 103 | 3 | 86 | 89 |
| 1880–1889 | 279 | 3 | 262 | 265 |
| 1890–1899 | 439 | 3 | 431 | 434 |
| 1900–1909 | 534 | 30 | 471 | 501 |
| 1910–1914 | 186 | 23 | 163 | 186 |
| 1915–1919 | | 15 | 182 | 197 |
| Total | 1,562 | 79 | 1,612 | [2] 1,691 |

[1] Source: Det Statistiske Departement, Copenhagen, Statistiske Efterretninger No. 6, 1920.
[2] In 1919 the statistical department received reports from only 1,691 cooperative consumers' associations. The cooperative wholesale society gives its membership for the same year as 1,792, which did not include all. Total number in the country is now over 1,800 societies.

In 1919 the 1,691 consumers' societies had 316,846 members. Of this number, 1,612 societies, with 252,659 members, were located in rural districts. As 20 per cent of the membership belongs to the 79 societies in the cities, the trend of the city societies has been toward amalgamation. The rural society may operate one or two stores, while the city society usually operates a number of stores. For instance, in 1916, the 16 consumers' societies in Copenhagen were com-

[38] Hertel, H., Andelsbevägelsen i Danmark. 1917, p. 51.

bined into one organization known as the Capital City Cooperative Consumers' Society, which had a membership of 7,684 with 43 shops when the consolidation was perfected. In 1921, the Copenhagen society had 94 shops with 28,846 members and owned and operated its own sausage factory and a 45-acre truck-gardening farm.

The Danish consumers' stores are organized on the Rochdale principles. Membership is open to all; each member has one vote; surplus is divided according to cooperative principles. Necessary capital is created by a loan executed by the local society. The members submit to joint liability in the society's financial obligations. A small membership fee is paid upon admission, which is credited to the society's reserve fund. Goods are distributed at current prices and usually on a cash basis. The board of directors, five members, is responsible for the general direction of the business. The board chooses the store manager, who arranges for his own assistance. Uusally the manager's salary is fixed on a commission basis of the volume of business. The general assembly (entire membership) meets twice a year. The financial statement is made up every six months.

According to the Danish trade law, a cooperative consumers' society which distributes to members only, is not required to register for a trade license. The statistical department, in 1919, found that only 40 per cent of the consumers' societies in Denmark had a trade license, and were thus privileged to trade with nonmembers. Without the trade license, the society's net earnings are exempt from income taxes.

### WHOLESALE SOCIETY.

One of the great difficulties experienced by the few individual consumers' societies in the early days, was the lack of a cooperative working program among themselves. The necessity of banding together instead of independent operation, was keenly felt by the leaders in the pioneer years. As early as 1871, a meeting of the leaders resulted in the formation of the first central cooperative wholesale society.[39] Its chief function was to provide a medium of joint buying for the local societies. After two or three years of fair progress, the joint purchasing ceased to gain ground and in 1876 the central society was discontinued. The joint purchasing feature was not a strictly cooperative wholesale business, as the board of directors of the wholesale society arranged for this joint purchasing through a merchant who was employed on a fixed commission basis. In reality, instead of the local societies creating their own wholesale establishment, this central purchasing plan merely added another middleman between the local societies and regular wholesale trade. That the society did not operate its own warehouse, which restricted its activities, is believed to have been a further cause of failure.

The first permanent successful federation among the Danish consumers' stores started in 1884 with the formation of the Cooperative

[39] A short historical sketch issued by the wholesale society, Fällesforeningen for Danmarks Brugsforeninger. Copenhagen, 1913.

Wholesale Society of Denmark among the societies on the Island of Själland. From the beginning this organization aimed to benefit by mistakes of past attempts; it provided sufficient capital to operate its own warehouses and to engage actually in the wholesale business itself. Four years later, a similar wholesale society was started on the Jutland Peninsula, among the consumers' stores in this Province. Finally, in 1896, these two central wholesale societies were combined into one organization, the Cooperative Wholesale Society of Denmark (*Fällesforeningen for Danmarks Brugsforeninger*, Copenhagen), whose activities have since covered the whole Kingdom.[40] The energetic initiative of Severin Jorgensen, one of the foremost leaders in the development of Danish cooperation, made possible this federation which established the Cooperative Wholesale Society of Denmark. He was the son of a country school-teacher and a country trader himself. After his association with the Idestrup village consumers' store in 1868, he rose from manager of a local store to president of the Cooperative Wholesale Society, which position he held from 1896 to 1913, when he retired.

Since the amalgamation in 1896, the Cooperative Wholesale Society of Denmark has made a remarkable growth, as illustrated in Table 9. The membership in the 1,805 consumers' societies embraces approximately 42 per cent of Denmark's households. On January 1, 1923, the wholesale society had 1,380,481 kroner in share capital and reserve funds amounting to 14,687,533 kroner.[41] During the past 27 years (1896–1922) the members' (consumers' societies) aggregate purchases from the wholesale society total approximately 1,512,000,000 kroner and they have been refunded 72,000,000 kroner during this period.

Membership is open to all stores which operate on a cooperative basis. Each consumer's society is required to subscribe for one share ($26.80 at par) for each 20 members. The wholesale society requires that the local society be organized on the unlimited liability plan, but the local's financial obligations to the wholesale society are limited to the extent of its shares and portion of the reserve funds. No buying pledge exists between the local store and the wholesale society, yet the Danish consumers' stores lead all other European countries with respect to patronizing their own wholesale society. About three-fourths of their wholesale purchases of goods handled by the society are made from the wholesale society, as compared with about one-half in England, Scotland, Germany, and Switzerland.

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[40] In the county of Ringköbing (Amt), West Jutland, there are two cooperative purchasing societies, one distributing household necessities (established 1885) and the other distributing farm supplies (established 1886), which operate independently of the wholesale society and restrict their activities to the large county of Ringköbing. The first society comprises 70 local units and did 4,867,406 kroner ($1,018,748 at exchange) business in 1922, and the latter embraces 45 locals with 4,000,000 kroner ($1,837,200 at exchange) business. In operating methods they differ from other Danish cooperatives mainly in two respects: (1) They do not aim to engage in importing and manufacture, but rather limit their activities to local distribution of commodities; and (2) goods are distributed at actual purchasing costs, plus expenditures involved in distribution.

[41] Andelsbladet No. 25, 1923, p. 513.

TABLE 9.—*The growth of the Cooperative Wholesale Society of Denmark in membership and business, 1896–1922.*[1]

| Year beginning January 1. | Number of consumers' societies. | Membership in the societies. | Sales, 1,000 dollars.[2] | Value of own manufacture, 1,000 dollars. | Net earnings, 1,000 dollars. |
|---|---|---|---|---|---|
| 1896 | 310 | 30,690 | 1,119 | ---------- | 29 |
| 1900 | 601 | 79,933 | 3,051 | 116 | 95 |
| 1905 | 1,029 | 143,031 | 6,547 | 494 | 314 |
| 1910 | 1,259 | 177,519 | 11,069 | 1,284 | 629 |
| 1914 | 1,407 | 219,492 | 15,102 | 3,227 | 1,008 |
| 1915 | 1,488 | 232,128 | 18,193 | 4,039 | 1,274 |
| 1916 | 1,537 | 239,772 | 23,477 | 4,908 | 1,967 |
| 1917 | 1,574 | 245,544 | [3] 24,091 | 4,836 | 1,869 |
| 1918 | 1,604 | 250,224 | 22,213 | 2,879 | 1,462 |
| 1919 | 1,729 | 323,323 | 30,172 | 6,355 | 1,936 |
| 1920 | 1,792 | 335,104 | 31,784 | 6,546 | 783 |
| 1921 | 1,800 | 336,400 | 31,045 | 6,348 | 540 |
| 1922 | 1,805 | 337,537 | 25,830 | 6,224 | 1,307 |

[1] Sources: Supplied by the main offices. Fällesforeningen for Danmarks Brugsforeninger. Copenhagen and also the society's annual reports.

[2] Converted at par of exchange prior to 1914, subsequently at prevailing average rates as quoted by Federal Reserve Board.

[3] The slight decrease in volume of business in 1917 and 1918 was caused by the war restrictions, which made it difficult for Denmark to secure her necessary supply of food.

The wholesale society engages in both the purchase and production of goods for the cooperative stores. The discrimination and boycotts which private interests have tried to effect against the Cooperative Wholesale Society, in different commodities from time to time, prompted the society to go closer to the sources of raw material and process the raw material in its own plants. The society now goes directly into the foreign markets and purchases raw material. Its activities in production have resulted in building several manufacturing establishments, which are operated and managed by the society. The different lines of production and date of establishment are: Coffee roasting (1897); chocolate manufacture (1900); confectionery (1901); tobacco and cigar manufacture (1902). Some of the other industries are represented by rope works, soap factory, chemical works, margarine factory, men's and women's ready-made clothing and shoe factories, bicycle factory, and tannery.

The Cooperative Wholesale Society of Denmark is a member of the Scandinavian Cooperative Wholesale Society (*Nordisk Andelsforbund*), which is a joint buying organization of the three cooperative wholesale societies in Denmark, Norway, and Sweden. It deals largely in foreign trade, especially the importation of colonial produce.

### COOPERATIVE PURCHASE OF AGRICULTURAL SUPPLIES.

Local attempts at joint buying of agricultural supplies occurred among the Danish farmers in the seventies, but it was the Cooperative Wholesale Society of Denmark which took the first steps toward the present development of cooperative buying and distribution of feeds, seeds, fertilizers, cement, and the like, when in the late eighties it established a special department for the purchase of seeds and fertilizers. Later, the buying of fertilizers was taken over by a separate association organized for this special purpose and the seed

department now specializes in the seed business. Although the Cooperative Wholesale Society initiated the first efforts toward cooperative buying of farm supplies, the development of the movement has led to specialization, resulting in the formation of independent purchasing associations, each to buy and distribute one particular kind of farm supply.

It is significant that, in the sphere of cooperative distribution, the Danish farmers have followed the business practice of large private corporations in specializing, rather than handling a large variety of commodities. As the cooperative movement enlarges its scope of activity in agriculture, it must so operate as to furnish the business efficiency and service offered by private dealers.

### SEED SUPPLY AND SEED GROWERS' ASSOCIATION.

A complete evolution has taken place in the plant industry and crop rotation system in Denmark with the development of the dairy industry during the last 40 years. With the change from grain farming to dairying, the farmers turned to the production of feeds for their livestock—mangels, swedes, turnips, and carrots, and clovers, alfalfa, and grasses. The yearly acreage in roots, including potatoes, is now approximately 1,000,000, or 13.6 per cent[42] of the agricultural lands as against 2.6 per cent in 1880. The area in clover, grasses, and alfalfa, together with thousands of acres in meadows for hay production and grazing, forms approximately 40 per cent of the agricultural lands. In early years, importation of seed was necessary and this seed frequently proved very unsatisfactory to the farmers, both in quality and because foreign varieties were introduced.

When the Cooperative Wholesale Society of Denmark began its seed-purchasing activities it started a movement to improve the production and sale of home-grown guaranteed seeds, from improved selected strains of seeds from its own experimental plots. This seed was then grown on the better farms under the control and supervision of its seed experts and specialists. To further its work the Cooperative Wholesale Society purchased a 17½-acre farm in 1904 and leased a larger farm, about 118 acres, in 1911.

Thus the Cooperative Wholesale Society introduced the guarantee of "genuineness" into the Danish seed trade. This guarantee, that the seed was of the strain stated, was possible when the seed they sold was grown in cooperation with the producers, under inspection, from stock seed supplied by their seed department. This great improvement won the confidence of the farmers and their agricultural societies, resulting in the formation of the Danish Farmers Cooperative Association for Seed Growing (*Danske Landboforeningers Fröforsyning*, Roskilde) in 1906, a nonstock cooperative association of farmers who are recognized as highly qualified seed growers. The aim of the association is to promote the growing of good seed from selected improved strains, to facilitate better trade conditions between grower and consumer and a profitable sale of good, guaranteed seed both at home and to foreign countries. The benefit to Danish agriculture has been twofold: Forage yield has been greatly

[42] Statistisk Aarbog, 1922.

increased by improved home-grown strains of seeds; and an important seed industry has been developed with a large surplus seed export of orchard grass, meadow fescue, swedes, turnips, and cabbages.

This cooperative effort on the part of the producers gave rise to a unique arrangement in 1913, in the way of a permanent agreement between the Danish Farmers Cooperative Association for Seed Growing and the Cooperative Wholesale Society. According to this agreement the growers' association undertakes the production of good seed from select strains under control, while the Cooperative Wholesale Society's seed department takes over all the retail trade in seeds produced by the members of the growers' association. The growers' association has agreed not to retail seeds and will sell at

FIG. 17.—Danish Farmers Cooperative Seed Growers' Association warehouse at Roskilde.

wholesale only the surplus which the society's seed department can not handle. The Cooperative Wholesale Society's seed department engages only in the retail distribution of seeds and will not grow seeds for commercial trade. A joint committee formed by the presidents and managers of both institutions manages the seed-experiment farms and controls the breeding work and production of stock seed.

The headquarters of the Danish Farmers Cooperative Association for Seed Growing are at Roskilde, together with a large, modern, well-equipped seed warehouse (fig. 17). Besides, the association owns and operates five branch warehouses with 45,000 square yards of storeroom, which are all equipped with special machinery for cleaning and drying seed.

The membership in the Danish Farmers Cooperative Association for Seed Growers consists of two classes: The A members, agricultural societies, which do not actually engage in seed growing and do not participate in the profits of the association, but which promote and encourage the growing of seed under control, stimulate an

interest among their members for the use of controlled seeds, and assist the growers' association in controlling the seed growers within their respective territories; and the B members, the individual seed growers. The general meeting is composed of delegates. The B members elect, in districts, one delegate for each 20 seed growers; while the A members are allowed one delegate for each 1,500 members in the agricultural societies. The A members have voting privileges only in matters pertaining to changes in the constitution and by-laws and agreements relating to control work and the seed sales department. The general assembly elects a board of directors of 15 members, proportionally distributed in the different provinces.

Each seed grower assumes a personal guarantee toward the association for the amount of 40 kroner ($10.72 at par) per acre, in his contract for seed growing. Five per cent of the purchase price is retained in the association's operating capital fund. A 5 per cent interest rate is paid the grower on his share of this fund, and after two years (usually 5 to 10 years) it is paid off. After writing off depreciation on property and equipment, 2 per cent of the purchase price is placed in the reserve fund until the reserve is equivalent to 10 per cent of the annual value of seeds produced. The volume of business handled by the association was 6,100,000 Danish kroner ($1,276,730 at exchange) in 1922.

The growers' association does not engage in seed production, except that it undertakes on its three experimental farms the production of new strains and the cultivation of stock seed from improved selected strains. Experimental work, in the way of comparative tests, is also carried on in cooperation with the State experimental stations and stock seed is produced on the farms of some of the best seed growers. The actual production of commercial seed for the trade is produced by the 3,000 seed growers (farmers) in the association. Only a member of an agricultural society, who is recommended by the county agricultural society's committee on plant culture, may be admitted to the association as a seed grower. When a farmer has been properly recommended, he must then enter into a contract agreement with the association to grow seeds, according to their directions and supervision. Each member is supplied with selected stock seed and properly instructed to guard against cross-fertilization. All fields grown by members under control are carefully supervised and inspected during the growing period by a staff of seed inspectors and specialists employed by the growers' association.

The control of the scientific work and the growing and sale of the seed in both institutions (the Danish Farmers' Cooperative Association for Seed Growing and the Cooperative Wholesale Society—seed department) is managed entirely by a committee composed of three members who are leading plant-breeding and seed specialists. This control committee is appointed by a board which is elected by the agricultural societies on the basis of one member to each 10,000 members in the agricultural societies. With regard to roots, grasses, clovers, and garden seeds, its supervision and control activities include: (1) Decision as to what kinds, strains, and families shall be cultivated; (2) oversight of cultivation of both original strains and those for use; (3) determination of place of cultivation and quality of seed imported; and (4) seeing that all seed sent out is

tested by the Danish States Seed Testing Station. The control committee does not fix prices or interfere with the financial management.

Nowhere in European agriculture has the gulf between the producer and consumer been so successfully bridged as in the Danish seed industry. The producers of good seed are guaranteed a market and consumers are guaranteed well-grown and clean seed of superior strain. Through this splendid organization the growers' association with its direct control of seed growers and knowledge of seed-market conditions was able to regulate the acreage during and immediately after the war and thus avoid overproduction. As a result the growers' association and its members are now operating on a sound basis, while many of the private Danish seed merchants are bankrupt.

**Net Import of Maize into Denmark.**

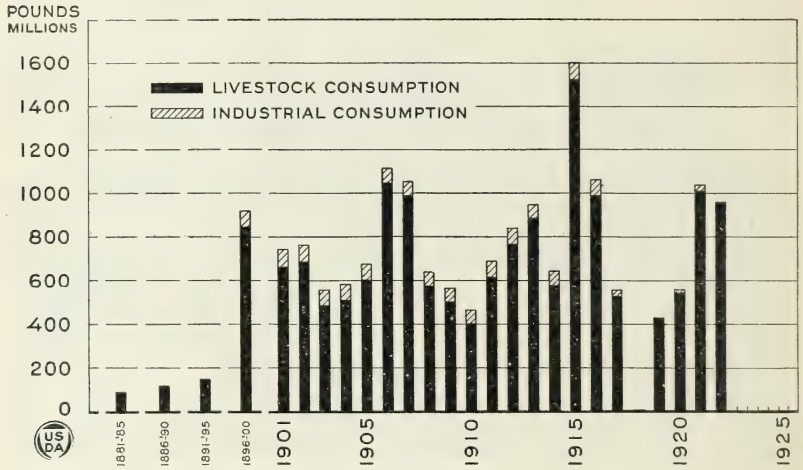


FIG. 18.—Beginning in the seventies the importation of maize for feeding increased with the development of Denmark's intensive animal industry. Submarine warfare during the war years cut off the normal imports. Data gathered through Denmark's Statistiske Departement.

With respect to distribution, the growers' association has the benefit of the largest organized distributive system in the country—the Cooperative Wholesale Society—which distributes both through its network of rural cooperative stores and through the agricultural societies. Between 25 and 30 per cent of the total acreage in seeds in Denmark belongs to the growers' association, and 25 per cent of the retail seed business is handled by the Cooperative Wholesale Society's seed department.

### FEED SUPPLY ASSOCIATIONS.

The new Danish agriculture meant an increased consumption of feedstuffs. In the late seventies, Denmark changed from a grain-exporting to a grain-importing country. Home production was unable to supply the increasing consumption of feeds, especially barley and maize. The principal oil cakes fed are cottonseed cakes,

sunflower cakes (chiefly imported from Russia), soybean cakes and soybean meal, linseed cakes, coconut and peanut cakes.

Denmark's import of grains[43] rose from a yearly import of 39,000,000 pounds in 1880–1885 to 1,895,000,000 pounds in 1913. The principal grain imported for feeding is maize (fig. 18), which comes largely from North America and South America. The importation of oil cakes has increased from a yearly average of 12,000,000 pounds in 1871–1875 to 1,308,000,000 pounds in 1913 (fig. 19). In addition to these imports, Denmark's home production of oil cakes was 124,000,000 pounds in 1913 and 180,000,000 pounds in 1921. The principal home oil-cake industry is based on the importation of soybeans from the Far East which are treated in Danish factories.

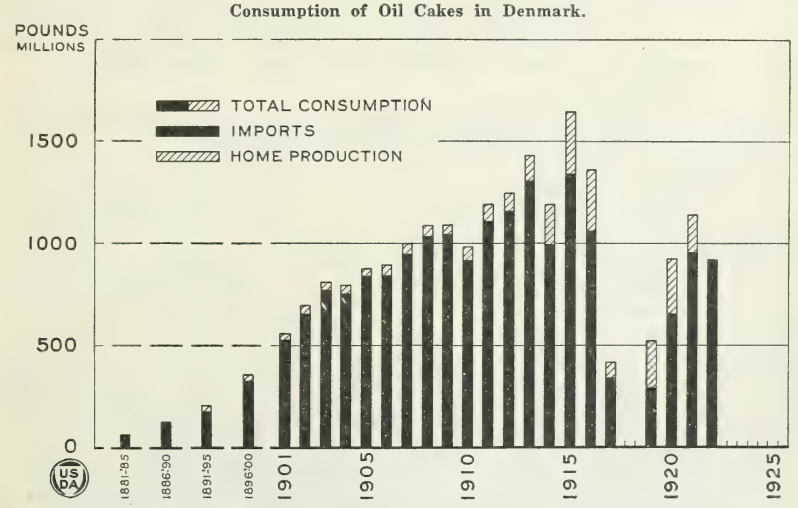


FIG. 19.—The consumption of oil cakes in Denmark has increased with the development of dairying. Submarine warfare during the war years cut off the normal imports. Data gathered through Denmark's Statistiske Departement.

The characteristic feature of this demand for feedstuffs is its uniformity, as practically every farmer buys oil cakes and maize for his cows and pigs. This provides a basis for common interest among the farmers in each community, which is helpful to the cooperative purchase association. The difficulties experienced in getting quality feeds at reasonable prices, especially imported grains and oil cakes, prompted the farmers to join in cooperative buying. Authoritative instances indicate that private grain and feed merchants attempted to organize and enforce trust prices on the farmers in the nineties. The cooperative associations have not only effectively combated such efforts, but have helped to develop a most reliable and efficient organization in the buying of feedstuffs in foreign countries and distributing to the Danish farmers.

Cooperative buying of feeds is done through central organizations, which limit their sphere of activity to a province. The whole coun-

[43] Data supplied by Denmark's Statistiske Departement, Copenhagen.

try is covered by three such central associations, but each operates in its own territory; Jutland Peninsula, Zealand, Laaland, Falster, Bornholm Islands, and the Island of Funen.[44] There is another smaller cooperative purchasing association of feedstuffs operating in Ringköbing County (Amt) in western Jutland. These four cooperative associations buying feeds now purchase and distribute between 45 and 50 per cent of Denmark's annual import of feedstuffs.

*Jutland feed supply association.*—The Jutland Cooperative Association for the Purchase of Feeding Stuffs (*Jydsk Andels-Foderstofforretning*, Copenhagen), which operates on the Jutland Peninsula, is the first and largest of its kind in the Kingdom. It was started in 1898 with 68 local associations and the first fiscal year had a turnover of 26,234,740 pounds of feeds at a value of 1,100,000 kroner. The central association now comprises 818 local associations and during the last fiscal year (1922–23) delivered 573,884,000 pounds of feeds, which amounted in value to 65,790,000 kroner. (See Table 10.)

TABLE 10.—*The Jutland Cooperative Association for Purchase of Feeding Stuffs. Membership and business, 1898–1923.*[1]

| Year beginning June 1. | Membership. | Feedstuffs delivered to local associations. | | Year beginning June 1. | Membership. | Feedstuffs delivered to local associations. | |
|---|---|---|---|---|---|---|---|
| | Number of local associations. | Million pounds. | Value in dollars.[3] | | Number of local associations. | Million pounds. | Value in dollars.[3] |
| 1898–99 | 68 | 26 | 294,800 | 1918–19 | 842 | 13 | 770,000 |
| 1905–6 | 249 | 232 | 3,242,000 | 1919–20 | 836 | 262 | 10,490,000 |
| 1910–11 | 587 | 351 | 5,038,000 | 1920–21 | 875 | 395 | 11,510,000 |
| 1915–16 | 745 | 646 | 17,950,000 | 1921–22 | 895 | 509 | 12,040,000 |
| 1916–17 | 821 | 576 | 19,930,000 | 1922–23 | 818 | 573 | 13,280,000 |
| 1917–18 | 848 | [2] 46 | 2,190,000 | | | | |

[1] Sources: The annual reports issued by Jydsk Andels-Foderstofforretning, Copenhagen.
[2] Note: The submarine warfare in 1917 and 1918 cut off Denmark's normal import supply of feedstuffs.
[3] Converted at par of exchange prior to 1914; subsequently at prevailing average rates of exchange as quoted by Federal Reserve Board

In the last fiscal year (1922–23)[45] the largest quantity of one article handled by the Jutland association was 150,000,000 pounds of maize, all imported, or 26.1 per cent of the association's volume of feeds handled. This also constitutes 15.6 per cent of the total volume of maize imported into Denmark for feeding purposes. Cottonseed cake is next in importance, 107,000,000 pounds, or 20 per cent of the association's turnover.

The central association owns nine warehouses, together with large reserve funds. During the first 22 years the central association had a surplus each year, of which a part (at least one-third) was retained in reserve funds and the remainder was returned to members in proportion to their purchases. The first and only loss occurred in the fiscal year 1920–21, when the central association lost 5,900,000 kroner ($948,449 at exchange), which was covered by its reserve funds. The drop in prices when large supplies were in warehouses

[44] Jydsk Andels-Foderstofforretning, main offices, Copenhagen. Öernes Andelsselskab for Indkob of Foderstoffer, main offices, Copenhagen. Fyns Andels-Foderstofforretning, main offices, Svendborg.
[45] Annual Report for Jydsk Andels-Foderstofforretning fra 1. June 1922 til 31 Maj 1923.

was largely responsible for this loss. The association had a net profit of 3,033,040 kroner ($576,711) in 1921–22 and over 2,000,000 kroner ($404,160) in 1922–23.

The following discussion covers the general form of organization and operating methods, which is common within any one of the three central associations.

*Purchase and distribution.*—The central association engages chiefly in purchasing feedstuffs (grains and oil cakes), which its members need for home consumption. In some instances the association sells home-grown grains and home-manufactured oil cakes for its members. Branch offices and warehouses are established at several important seaport and railway centers. This property is usually owned by the central association. The distribution to the local associations, as they order, is made from the nearest warehouse.

The purchasing business of the central association is conducted as by any other grain and feed supply merchant, except that the dis-

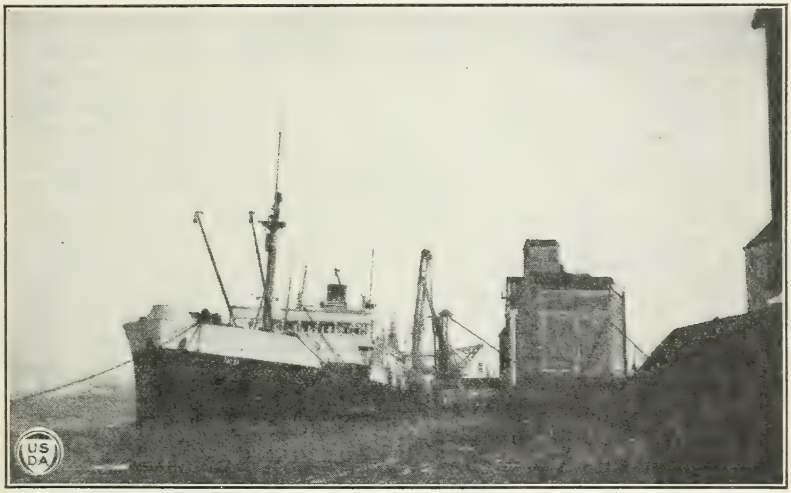

FIG. 20.—The U. S. S. *Tulsa* unloading a cargo of United States corn to the Cooperative Feed Purchasing Association at Aalborg.

tribution is usually more direct. In making its purchases abroad, the central association's manager buys direct from foreign manufacturers and exporters, whole cargoes of oil cakes and maize, which are unloaded at the different seaports into its own warehouses. (See fig. 20.) The manager estimates the amount that will be needed by his members without waiting for advance orders from the local associations. The officer of the local association sends the order for the feeds required by the local farmers to the central association's nearest branch office. The goods are delivered from ship or the nearest warehouse to the local association with 30 days' credit. The members usually pay the local association when goods are received or in such time that the association can remit to the branch office of shipment within the 30 days. The members of the local associations are jointly liable and guarantee payment for all goods received from the central association.

Each of the larger local associations usually has its own warehouse, but many of the smaller associations do not. In some in-

stances two or three local associations in the same territory own and operate a warehouse together. The association with a warehouse may have some advantages if care is taken to order goods direct from the ships, the prices, of course, being slightly cheaper from ship than from stock. The members can call for their feed supplies when needed. The local association with a warehouse usually has capital in a local bank. The local association without a warehouse usually requires no capital. Goods are distributed directly from car on track to members, and they pay for the goods in sufficient time to enable their association to make proper remittance to the central association.

The central association distributes its feed supplies through the local association to members at prevailing current prices. At the end of the fiscal year the surplus earnings (after reserve funds are provided for) are returned to the local associations in proportion to their purchases. The central association controls the price at which the goods are distributed.

*Finance.*—No initial membership fee is required. The central associations are nonstock associations. To provide for their credit each local association must pledge its guaranty to a sum usually equivalent to 2 kroner (53.6 cents at par of exchange) per cow, with a minimum of 500 kroner ($134) for each local association. The contract agreement, which the individual members sign in each local association, authorizes its board of directors to underwrite this guaranty certificate, for which amount the members in the local association assume joint liability. This guaranty certificate is then forwarded to the central association to be used by it in providing necessary funds to carry on its operations. This guaranty money may be demanded for payment to cover any deficits contracted by the central association; but beyond this the individual members are not financially liable to the central association, except that the members of the local association are jointly liable for the payment of all goods delivered to the local association.

A large reserve fund is gradually accumulated by the central association from its net earnings. According to its by-laws, the Jutland Peninsula Association must retain at least 25 per cent of its yearly net earnings for reserve funds, while some of the other associations retain as high as 50 per cent. The reserve funds are used for operating capital, with an interest rate of 5 per cent. In case of withdrawal at the end of the membership period, one-third to two-thirds of the local associations' share of the reserve fund is paid off. Besides the reserve funds, large sums are yearly written off the central association's property and equipment, which appear on their books at a fraction of their value.

*Membership.*—Membership in the central association is made up chiefly of local feed-purchasing associations; but in some cases cooperative creamery associations, consumers' stores, and other associations which supply their members with feeds may be members.

The local association is pledged to take its entire supply of feedstuffs from the central association for a period of five years. If a local association desires to withdraw its membership, it must give six months' notice before the close of the five-year period, otherwise the membership is automatically renewed. The individual members under written agreement to the central association are

pledged to take their consumption of feeds (excluding home-grown grains) from the local association. With one central association this is limited to 660 pounds per cow each year.

*Management.*—The guaranty-capital and buying-pledge agreement of the local association must conform to the requirements of the central association. Aside from this, the individual members manage and govern the internal affairs of the local association. The general assembly, which ordinarily meets once a year and is made up of delegates elected by members,[46] constitutes the highest authority in the affairs of the central association. These delegates elect the committee of representatives (*Repräsentantskab*),[47] whose members are elected for three years. Representatives are distributed in districts, according to local membership. The committee of representatives perfects its own organization, elects chairman, vice chairman, and secretary, and elects from its own members the board of directors, which consists of five members. Disputes arising between the central association and its members must be laid before the committee of representatives for settlement. If this decision is not satisfactory, it may be carried to the general assembly, where, if it involves a large sum, it will be disposed of by an arbitration court.

The board of directors, with the approval of the committee of representatives, delegates the business management of the association to a competent business man (experienced feed and grain merchant), who conducts the association's business.

Members of the committee of representatives are allowed transportation expenses and per diem when on official duty. The board of directors is allowed expenses and a salary sum as a board, which is usually fixed by the committee of representatives. The president generally receives about two-thirds of this sum, as he is usually called upon to give considerable time and attention to organization and business matters.

### FERTILIZER SUPPLY ASSOCIATION.

The first cooperative effort among the farmers for buying their fertilizers was through local associations, but their buying was usually handled jointly through other central purchasing associations. In 1901, 22 local purchasing associations for fertilizers in Jutland formed the Danish Cooperative Fertilizer Supply Association. At first its activities were restricted largely to the Jutland Peninsula, but both territory and membership were gradually enlarged and it finally became the national federation. The approaching conditions of monopoly and price fixing in the Danish fertilizer trade prompted the farmers to consolidate and rally enthusiastically around one central purchasing association. In 1916 the Danish Cooperative Fertilizer Supply Association[48] (*Dansk Andels-Gödnings Forretning*, Copenhagen) was reorganized to cover the whole

[46] In the Jutland Peninsula Association the general assembly gives admission and vote to one delegate for each 100 members. The Islands association gives admission and vote to one delegate for each $134 guarantee capital.

[47] In the Jutland Peninsula Association the committee of representatives comprises 35 members; in the Islands association, 17 members.

[48] Sources: Dansk Andels-Gödning Forretning, 1922; Vedtägter for Dansk Andels-Gödnings Forretning of 1916, issued by the fertilizer association; Andelsbladet for 1915, 1916, 1921, 1922, and No. 14, 1923.

Kingdom and is now one central association embracing all cooperative buying of fertilizers among the Danish farmers.

The central association buys all kinds of fertilizers on the open market and distributes to its members at prevailing prices. It maintains headquarters in Copenhagen and two branch offices and several warehouses in provincial towns. With the local associations, the fertilizers are distributed direct from the cars on track.

The central association's membership comprises local associations, formed for the purpose of buying and distributing its members' supply of fertilizers on a cooperative basis, which in 1922 numbered 1,525 with 74,000 members. The association is supported largely by the middle-sized farmers and small holders. The farms enrolled in the central association cover an area of nearly 3,000,000 acres, or 40 per cent of the farm lands in the country.

The contract agreement between the individual members and the central association comprises two features: (1) Each member in the local association must attach his signature to a special form list (by-laws, rules, and terms of agreement), whereby he is pledged to buy all commercial fertilizers used on his farm for a 10-year period. This buying-agreement pledge list from each local association is sent to the office of the central association when properly signed by each individual. A fine of 20 per cent of the trade value is imposed upon the member who violates this buying agreement. Withdrawal may occur at the close of each 10-year period by giving one year's advance notice. In case of withdrawal, members can demand payment of two-thirds of their share of the reserve fund with the central association. (2) The board of directors of each local association must sign a "guarantee certificate," the amount of which is equivalent to 0.5 per cent of the taxed valuation of the farm lands belonging to the members in their association. The individuals are jointly and severally liable to the central association for the amount of this guarantee, together with the members' purchasing liabilities to the central association. Aside from this, the local association is not liable for the central association's obligations.

The guarantee certificate provides for the central association's necessary bank credit and purchasing liabilities. The guarantee certificates held by the central association in 1922 amounted to 5,600,000 kroner. A part of the yearly net earnings is laid aside for depreciation funds (the association owns its warehouses in seven provincial towns, which appear on its books at a fraction of their value); from one-third to one-half of the net earnings is placed in the reserve fund and the balance is returned to members in proportion to their purchases. During the fiscal year 1922, the central association handled 261,399,047 pounds of fertilizers, at a trade value of 17,483,192 kroner.

The annual general assembly is formed by one delegate from each local association. This body elects the committee of representatives (*Repräsentantskab*) composed of 23 members apportioned among the different Provinces, and the committee of representatives elects the board of directors of seven members. This board, with the approval of the committee of representatives, arranges for the general business manager and other technical heads to lead the association's business affairs.

### MARLING ASSOCIATIONS.

Marling the cultivated lands is a common practice in most sections of Denmark. Marl pits, with a fairly high percentage of lime carbonate are found in many communities. The farmers surrounding the marling pit form a local cooperative association, which owns and operates the digging machine, transportation cars, and movable tracks for distributing the marl to the members' farms. Such local associations, operating independently, number over 50. The farmers located in communities where no local marl pits are found have formed large associations, which operate digging machines, trucks, cars, and locomotives at large marl pits, and distribute to local associations of farmers scattered throughout the country. The largest central association of this kind is the West Jutland Marling Supply Association (*Andels Selskabet Vestjylands Mergelforsyning*) established in 1907, which now comprises 100 local associations.

### CEMENT FACTORY.

Denmark claims the first and only cooperative association cement factory in the world. There are also six private or stock-company cement factories in Denmark. Four of these plants are located along the Limfjord, near Aalborg, where large deposits of chalk and clay are available for the manufacture of Portland cement. The normal consumption of cement in Denmark is about 1,500,000 barrels per year. Before the erection of the cooperative plant, the united cement factories in Denmark produced about 2,600,000 barrels yearly.

The cement cooperative association owns a tract of 193 acres, with chalk pit and clay areas, together with an up-to-date cement factory in Nörre Sundby, northern Jutland. This achievement on the part of the cement users marks one of the most interesting accomplishments in Danish cooperation. Here the users of a product have harnessed the cooperative idea to gain their economic freedom from trust organization. This freedom was attained through what is commonly known as the cement war in Denmark 1911–1913. The cement ring, comprising cement factories in the Scandinavian countries and northern Germany, was formed in 1899 and created a situation which resulted in trust prices to cement users. Its power reached the zenith in 1911, when the cement war began.

The leaders of the Jutland Cooperative Association for the Purchase of Feedstuffs, realizing that erection of their own cooperative plant was the only way the cement users would free themselves from ring prices, sent out invitations to 2,000 local cooperative associations and several hundred manufacturers of cement wares and bricks to come together for consideration of this project. Already in November, 1911, at the first organization meeting, nearly 300 local cooperative stores and purchasing associations and scores of individual manufacturers of cement wares had signed a 5-year contract to purchase their cement consumption from the proposed cooperative plant. Special mention is due Direktör Anders Nielsen, *Svejstrups Östergaard*, whose enthusiastic and capable leadership made this cooperative project a reality.

On this basis it was decided to build a cement factory with a capacity of 200,000 barrels. This capacity was increased during the building period to care for the increasing membership. The new plant delivered its first cement to members in the summer of 1913. At the time of the annual general assembly meeting in November, 1913, the association had a cement factory in operation with a capacity of 300,000 barrels a year, erected at a cost of 1,118,044 kroner ($299,636 at par), and 400 local cooperative associations and 116 individual shareholders had signed 5-year agreements to take their necessary cement, together with a definite amount of share capital.

The problem of financing this undertaking was embarrassing, as the cement ring had gained a powerful influence with the large banking institutions in the Kingdom. The association experienced great difficulty, but finally at a late date a large Copenhagen bank granted the association a loan of $160,800 at par of exchange. The membership share capital amounted to $64,836. The Jutland Cooperative Association for the Purchase of Feeding Stuffs granted a loan of $53,600. When the necessary fixed capital had been finally secured and the plant completed, the association needed $53,600 for operating capital. The association turned to the large banks but found the doors closed to it. When the banks refused to supply the plant with operating capital, the leaders in the association went out and raised the required amount through private loans among the cooperators.

Both associations and individuals are members of this association. Cooperative stores and other cooperative purchasing associations may become members. The individual users of cement join one of the local associations and receive their cement supply through it. Each association must buy at least one 500 kroner share of capital in the plant, one-fourth in cash and balance in four yearly installments. The association agrees to purchase the entire cement supply used by its members for a period of five years.

Individual members who are large users of cement, such as manufacturers of cement wares and building contractors, may become members of the cooperative cement factory association. The amount of their share capital is fixed according to their yearly cement purchases, and each member is pledged to purchase his supply from the cement factory for a 5-year period. Both kinds of members are liable for the factory's obligations only to the extent of their share capital.

Cement is distributed to members at the prevailing prices on the Danish market. The net surplus earnings are returned to the members in proportion to their purchases. The committee of representatives (25), elected by the members, elect the board of directors, which in turn elects the manager, who assumes the business management of the factory.

What the Cooperative Cement Factory meant to the cement users in Denmark was quickly realized when the cement prices with the United Cement Factories dropped 2 kroner (53.6 cents) per barrel the first year. With the normal use of 1,500,000 barrels, this meant a saving of $804,000 the first year. The association announced a net earning of $14,204 the first year. In 1914 the factory was too

small to supply the demands. Arrangements for a loan of $263,400 were made with the Danish Cooperative Bank (established, 1914) for expansion. Legal proceedings, which also involved the Cooperative Wholesale Society, necessitated the closing of the plant in 1915 and 1916. During this period the plant was rebuilt and its capacity increased to 650,000 barrels of Portland cement per year. In 1922, its membership comprised 818 local associations and 172 individual members, with a subscribed share capital of 463,000 kroner. The association operates branch warehouses in 25 towns and cities.

The members are first supplied with cement for their current needs. Next the factory may sell to outside buyers, including those from foreign countries. The factory has a large export business to Norway, Sweden, Germany, the West Indies, Brazil, Africa, and the Far East colonies. At present about one-sixth to one-fifth of the cement used in Denmark is produced by the cooperative factory. Aside from supplying its own members at cost, the cooperative factory has brought down the cement prices and the cement users in Denmark are buying their cement at fair prices. Onwers of the old private plants have been forced to reorganize and modernize their factories and reduce the cost of production and distribution in order to compete successfully with the modern cooperative cement factory. Even though the cooperative plant should supply only a small part of the cement used in Denmark, this production will serve the entire social organization as a check on efficient production and fair prices.

### COAL SUPPLY ASSOCIATION.

In 1913, the Danish cooperators formed the Danish Cooperative Coal Supply Association (*Dansk Andels-Kulforretning*, Aarhus) for the purchase of good coal and distribution to members at reasonable prices. The bulk of the coal is delivered to associations where coal is required to operate their enterprise, rather than to the individuals. Consequently its membership consists of local coal-purchasing associations, cooperative creameries, bacon factories, consumers' stores, etc., which are regular users of coal. During the first fiscal year the central association had a membership of 500 local associations. World War conditions made it necessary to suspend its activities at times; but, with approaching normal trade conditions, the association is resuming its operations. It now has 700 members and handles 70,000 tons of coal annually.[49]

Coal is imported chiefly from Great Britain, where the association buys direct from the shippers. The central association maintains storage houses, but a large part of the coal is delivered direct from ship by rail to the local association. The central association distributes the coal at prevailing prices. The membership obligation involves a 5-year agreement for the purchase of its coal consumption and a guarantee sum equivalent to $2.68 per ton for the approximate amount of coal needed. This provides the necessary bank credit for financing the central association's purchases.

[49] Andelsbladet No. 22, 1923, p. 439–47.

AGRICULTURAL MACHINERY AND IMPLEMENTS.

Purchase of agricultural implements and machinery on a cooperative basis is practiced in some communities, usually through other local purchasing associations, but it is not so highly organized as with other farm requirements. The principal organization of this kind is the Danish Creameries Wholesale Society and Engine-Factory (*De Danske Mejeriers Fällesindköbs og Maskin-fabrik*, Copenhagen). It deals mainly with creamery associations and manufactures, purchases, and distributes dairy machinery and equipment for its members. It had 1,633 members in 1922, and the average yearly business for the past five years has been approximately 5,000,000 kroner, which would have been equivalent at par of exchange to $1,340,000.[50]

Cooperative use of agricultural machines and farm implements is common in the farm communities, especially with the smaller farmers. Many such associations own and operate steam and electric motor threshing machines, harvesters, drills, etc. Another important cooperative enterprise, which has developed rapidly during the last decade, is the community electric plant constructed and operated on a cooperative plan.

## COOPERATIVE BREEDING ASSOCIATIONS.

Improvement in livestock effected through cooperative breeding associations is one of the most remarkable achievements in Danish agriculture during the last 40 years. The increase in number of livestock from 1881 to 1914, as indicated in Table 11, was 68 per cent for cattle, 63 per cent for horses, and 374 per cent for swine, and the improvement in quality and productivity far surpassed the increase in numbers. According to Prof. H. Larsen,[51] the number of milk cows from 1881 to 1914 increased 45 per cent, while the total milk production increased 150 per cent. This remarkable improvement toward profitable dairying is further shown by the increase in the average yield per cow in Denmark from 3,306 to 5,730 pounds during this period. Similar improvement has been achieved in the swine industry, where a superior bacon type highly desirable for the English market has been developed.

When the Danish farmers changed to livestock production they were extremely poor. They had no money to import improved stock and were compelled to improve their native stock. It was in this direction that the cooperative idea was again harnessed and put to work with a degree of success which has no parallel in other countries. Breeding associations were formed for the purpose of bringing to the farms in each neighborhood better breeding sires. The remarkable characteristic about livestock improvement in Denmark is the great improvement attained on the average farm. At the agricultural livestock shows the majority of prize-winning sires are owned and exhibited by breeding associations. The benefits derived from the cooperative breeding associations have been two-fold: General improvement effected throughout the whole country, and increased demand for good sires at good prices. This demand for

[50] Andelsbladet No. 21, 1923, p. 415–21.
[51] Den Kgl. Veterinaer og Landbohöjskole Aarsskrift, 1918, p. 286.

superior sires has been highly encouraging and stimulating to the best breeders in the Kingdom.

TABLE 11.—*Number of livestock in Denmark, 1881–1922.*[1]

[000 omitted.]

| Year. | Horses. | Cattle. | Hogs. | Sheep. | Year. | Horses. | Cattle. | Hogs. | Sheep. |
|---|---|---|---|---|---|---|---|---|---|
| 1881 | 347 | 1,470 | 527 | 1,549 | 1914 | 567 | 2,463 | 2,497 | 515 |
| 1893 | 411 | 1,696 | 829 | 1,247 | 1918 | 544 | 2,123 | 620 | 470 |
| 1898 | 449 | 1,745 | 1,168 | 1,074 | 1921 | 598 | 2,591 | 1,430 | 522 |
| 1903 | 487 | 1,840 | 1,457 | 877 | 1922[2] | 576 | 2,525 | 1,899 | 442 |
| 1909 | 535 | 2,254 | 1,468 | 727 | | | | | |

[1] Source: Danmarks Statistiske Departement, Copenhagen.
[2] Figures for 1921–22 include the Slesvig Province.

With respect to encouragement and even financial aid from the Federal Government the cooperative breeding associations and the cow-testing associations differ from other branches of Danish cooperation. In fact the cooperative breeding association is the only cooperative undertaking in the history of Danish cooperation which the Government has supported with financial aid. The Government was evidently quick to recognize the great national economy to be gained from improved livestock. The first breeding associations were formed during the middle of the eighties, but the real stimulus to the movement was the Danish law relating to livestock enacted in 1887, which provided funds for aiding breeding associations for cattle and horses when organized along cooperative lines. The appropriations were increased by legislative enactments in 1893 and 1902 and were modified to include swine and sheep. This Government aid increased steadily until 1912, when it was felt that the work should support itself. In fact, the underlying aim of Federal support from the beginning was education and promotion. Legislative changes in 1912 eliminated the grants for swine and sheep and greatly reduced funds available for cattle and horse breeding associations.

The development of breeding associations throughout the country is well illustrated in Table 12. According to the official survey [52] covering the whole country, made in 1909, the percentage of the farms with horses, which were members of a breeding association, was 14.5; with cattle, 16.5; with swine, 3.8; and with sheep, 1.

TABLE 12.—*Cooperative livestock improvement associations, 1890–1922.*[1]

| Year. | Horse breeding. | Bull. | Swine breeding. | Sheep breeding. | Cow testing. |
|---|---|---|---|---|---|
| 1890 | 38 | 135 | (2) | ---------- | ---------- |
| 1900 | 203 | 634 | 66 | ---------- | 180 |
| 1905 | 233 | 1,095 | 163 | 67 | 415 |
| 1910 | 270 | 1,260 | 253 | 110 | 520 |
| 1914 | 259 | 911 | ---------- | ---------- | 633 |
| 1919 | 340 | 1,116 | ---------- | ---------- | 636 |
| 1922 | 370 | 1,274 | ---------- | ---------- | 821 |

[1] Sources: Danmarks Statistiske Departement and the yearly publications Landökonomiske Aarbog. These figures include only associations officially registered with the ministry of agriculture for Federal aid.
[2] No figures available.

[52] Statistiske Meddelelser 4 Räkke, 36 Bind, 4 Häfte. 1911.

### BULL ASSOCIATIONS.

The breeding association work began with the formation of the first bull association in 1884. The initial step was taken by two farmers [53]—J. M. Friis, a tenant, and Fr. Hvass, an estate-farm owner. The plan was to organize a bull association in each community as a means for improving the native cattle breeds along the most economical and scientific lines. The merits of the plan were readily recognized by the State, and in 1887 the Federal Government appropriated funds to be used for developing the breeding-association idea. With this encouragement the movement spread rapidly; and, in 1890, 66 cattle-breeding associations were receiving grants for bulls owned. The development is shown in Table 13.

TABLE 13.—*Bull associations receiving Federal aid.*[1]

| Year. | Number of associations. | Number of bulls. | Amount of Federal grants. | | Year. | Number of associations. | Number of bulls. | Amount of Federal grants. | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Danish kroner. | Dollars.[2] | | | | Danish kroner. | Dollars.[2] |
| 1900 | 634 | 710 | 70,000 | 18,760 | 1912 | 1,072 | 1,228 | 190,000 | 50,920 |
| 1905 | 1,095 | 1,369 | 181,050 | 48,521 | 1913 | 934 | 1,123 | 91,000 | 24,388 |
| 1909 | 1,259 | 1,464 | 220,000 | 58,960 | 1914 | 911 | 1,104 | 84,000 | 22,126 |
| 1910 | 1,260 | 1,463 | 220,000 | 58,960 | 1915 | 925 | 1,048 | 88,000 | 22,405 |
| 1911 | 1,145 | 1,325 | 203,000 | 54,404 | 1921 | 1,274 | 1,446 | 109,005 | 19,381 |

[1] Source: Hertel, H. Andelsbevägelsen Danmark, 1917, p. 327. Landökonomiske Aarbog, 1922.
[2] Converted at par of exchange prior to 1914; subsequently at average prevailing exchange as quoted by Federal Reserve Board.

The Government places great emphasis on exhibit of the better livestock at the local agricultural shows and on use of the cow-testing association, which accounts for the fact that to participate in the Federal Government aid, the rules and general functioning of the bull association must meet with the approval of the Ministry of Agriculture. The general form of organization required by the Ministry of Agriculture in order to receive Federal aid is: [54] (1) The bull association must have at least 10 members; it often has from 20 to 50. The average association comprises 20 to 25 members, including both small and large farms. (2) Adherence to veterinary inspection of both bulls and cows is demanded. (3) After the age of $1\frac{1}{2}$ years, bulls belonging to associations may receive a yearly grant, provided that the bull meets the required placings at the local and State agricultural livestock shows. Members are required to exhibit any offspring from the sire when requested. According to the present law, an association bull may receive grant of 80 to 125 kroner ($21.44 to $33.50 at par of exchange) each year. The amount of the grant is largely determined by the percentage of the members' cows in the cow-testing association. If less than 50 per cent of the members' cows are in cow-testing associations, the grant is only 80 kroner ($21.44); from 50 to 75 per cent the grant scales from 80 to 125 kroner ($21.44 to $33.50), and with over 75 per cent the

[53] Hertel, H. Andelsbevägelsen i Danmark, 1917, p. 317.
[54] Lov om Husdyravlens og Husdyrbrugets Fremme, Landbrugs Ministeriet, Copenhagen.

full 125 kroner ($33.50). (4) Members are jointly liable for any debt incurred by the society, apportioned among members according to the number of cows they have registered with the association.

In buying a bull in Denmark the common practice is to pay a cash sum at the time of sale and to agree to pay an equal amount on conditions depending on the winning of certain prizes at the local, provincial, and State livestock shows. The actual working of this plan is illustrated by the following instance. In the Höjrup community, near Pederstrup village on the island of Funen, there is a bull association with 22 members and 150 cows. In the summer of 1921 this association purchased a 2-year-old bull, considered one of the best young bulls of the Danish red dairy breed in the province. The purchase price was 8,000 kroner ($1,422 at exchange) in cash and 8,000 kroner conditional prize money. A few weeks later at the provincial agricultural shows, this bull won first prize. Immediately the association paid the former owner 2,000 kroner of the scheduled prize money.

Different methods of financing the buying of a bull are employed by associations: (1) The undertaking is financed entirely by a loan executed by the association, members having pledged joint financial responsibility. (2) Each member in the association pays an entrance membership fee of 50 kroner ($13.40 at par of exchange); if more money is needed, the balance is raised by loan. (3) Each member may pay an initial fee per cow registered with the association. The agreements with members are usually made on 3 to 5 year periods, and financial arrangements are planned to have the bull paid for at the end of this period.

### COW-TESTING ASSOCIATIONS.

In the sharing of Federal appropriations for cattle-breeding improvement, the Government has placed much stress on the cow-testing association's work, especially since 1912.

The first cow-testing association was formed by 13 farmers in the neighborhood of Vejen in 1895.[55] It was probably the first association of its kind in the world. A great deal of credit for the early work of the cow-testing associations is given to Neils Pedersen, owner and principal of the Ladelund Agricultural School. With the formation of the association, he immediately arranged for a special course in the agricultural school for training young men to take charge of the cow-testing work. Later similar courses were established in the other agricultural schools. Employment of a man to determine the fat content of each cow's milk and the keeping of feed records of the cows owned by the farmers in the association are on a cooperative basis.

The cow-testing association plan was a success from the beginning, and was a real contribution to the dairy industry. Their numbers have increased steadily as shown by Table 14. The 295,290 cows in the cow-testing associations in 1922 represented about 23 per cent of the total number of milk cows in the country.

[55] Kontrolforeningerne og Deres Arbejde 1895–1920, Copenhagen, 1920.

TABLE 14.—*Cow-testing associations in Denmark.*[1]

| Year. | Number. | Members. | Cows. | Year | Number. | Members. | Cows. |
|---|---|---|---|---|---|---|---|
| 1895 | 1 | 13 | | 1909 | 519 | 12, 572 | 224, 837 |
| 1900 | 180 | 3, 880 | 76, 140 | 1914 | 633 | 14, 400 | 222, 600 |
| 1901 | 242 | 5, 420 | 100, 500 | 1920 | 673 | 16, 100 | 223, 300 |
| 1902 | 262 | 5, 870 | 110, 800 | 1921 | 752 | 18, 659 | 261, 510 |
| 1903 | 308 | 7, 380 | 136, 800 | 1922 | 821 | 21, 420 | 295, 290 |
| 1905 | 415 | 10, 300 | 159, 600 | | | | |

[1] Sources: Statistiske Meddelelser, 4 Räkke, 22 Bind, 5 Häfte- 1906, and yearly numbers of Landökonomisk Aarbog. These figures include only those associations receiving Federal aid.

### HORSE-BREEDING ASSOCIATIONS.

Denmark claims two native horse breeds, the Frederiksborg light coach horse and the Jutland draft horse. The Frederiksborg horse

FIG. 21.—The Jutland farm horse. Breeding associations have put better horses on Danish farms.

is commonly bred on the islands of Seeland and Bornholm. The Jutland draft horse, which is particularly well-fitted for farm work, is largely bred on the Jutland Peninsula. In some districts on the peninsula, horse breeding is an important part of general farming. In pre-war days, the Jutland horse found a ready market on the Continent, especially in Germany. Then the Danish farmers exported approximately 5,000 horses each year.

Although horse breeding has played a more or less important economic rôle in Denmark for centuries, the great improvement in the Danish farm horse (the Jutland horse) (fig. 21) has come within the last 40 years, and during this period the average farm has been provided with better horses. This improvement is attributed to the cooperative horse-breeding associations.

The first horse-breeding association in Denmark was formed on the Island of Bornholm in 1879.[56] A second association was formed

[56] Hertel, H. Andelsbevägelson i Danmark, 1917, pp. 343, 344.

on the Island of Seeland in 1886. Both were formed to further the light Frederiksborg breed. The first horse-breeding association to further the Jutland breed was formed on the Jutland Peninsula in 1887,[57] by 100 peasants, who owned good mares and stallions. The association first aimed to improve the selection of the best mares in the community, and a committee saw that the best mares and stallions owned by the members were mated. Under the law of 1887 regarding livestock improvement, the Government provided grants to stallions purchased by such associations. The purchase of the best stallions then became the chief aim. This gave the horse-breeding associations (stallion associations) a more definite form, the size of membership generally being determined by the number of farmers whose good mares could be served by one stallion. Associations of this type sprang up all over the country and by 1890 they numbered 38.

The Government appropriations for grants to stallions increased from 2,000 kroner ($536) to 20,000 kroner ($5,360) during the first five years, but the rapid increase in the number of associations gradually decreased the amount of each grant. In 1893 the law was revised, requirements regulating the amount of the grant to each stallion were promulgated, and the appropriation was increased to 4,000 kroner ($1,072). Since then the law has been revised several times, both as to the size of grant and requirements of the associations owning stallions to which grants were made. Since 1912, the State aid has been gradually decreasing. (See Table 15.)

TABLE 15.—*Horse-breeding associations receiving Federal aid.*[1]

| Year. | Associations. | Stallions. | Amount of Federal grants. | | Year. | Associations. | Stallions. | Amount of Federal grants. | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Danish kroner. | Dollars.[2] | | | | Danish kroner. | Dollars.[2] |
| | *Number.* | *Number.* | | | | *Number.* | *Number.* | | |
| 1900 | 203 | 254 | 50,000 | 13,400 | 1913 | 267 | 272 | 154,000 | 41,272 |
| 1905 | 233 | 273 | 116,000 | 31,088 | 1914 | 259 | 263 | 138,000 | 36,349 |
| 1909 | 270 | 312 | 159,000 | 42,612 | 1915 | 201 | 205 | 102,000 | 25,969 |
| 1911 | 280 | 295 | 161,000 | 43,148 | 1916 | 163 | 167 | 75,000 | 20,835 |
| 1912 | 267 | 281 | 169,000 | 45,292 | 1921 | 370 | 550 | 96,503 | 17,158 |

[1] Source: Hertel, H. Andelsbevägelsen i Danmark, 1917, p. 350, and Landôkonomisk Aarbog, 1922.
[2] Converted at par of exchange prior to 1914, subsequently at average rates prevailing as quoted by Federal Reserve Board.

GOVERNMENT GRANTS TO ASSOCIATION STALLIONS.

The grant is now one-fourth of the stallion's cash purchase price, but the grant to any one stallion may not exceed 2,000 kroner. The grant is remitted to the association annually in four yearly installments. If a stallion is to receive a grant, the Government demands the following:[58] (1) The horse-breeding association must have at least 20 members and its constitution and by-laws must be recognized by the Ministry of Agriculture. (2) Stallions must be of a certain quality and possess superior breeding qualities. Stallions

[57] De Samvirkende Jydske Hesteavlsforninger 1888–1913, p. 13.
[58] Lov om Foranstaltninger til Husdyravlens og Husdyrbrugets Fremme, Landbrugs Ministeriet, Copenhagen.

must be 4 years old or over. At 4 and 5 years the animal must win at certain specified provincial and State livestock shows and so must its offspring. During the four years (age 4, 5, 6, and 7) the stallion must show at least 40 per cent breeding returns. (3) Stallions receiving grants must be allowed to cover up to eight mares from nonmembers, selected by the State horse specialist each year. This proviso is designed to improve the breed in general, as the best mares may not be owned by members of an association with an outstanding stallion. (4) The association with a Government grant must arrange for a classification judging for mares (*Hoppe-Kaaring*) at least once every three years.

A typical horse-breeding association usually has from 50 to 100 farmers, with 125 to 150 mares. Some associations may have two stallions, including a promising young horse. Each member has one vote. The board of directors consists of five or seven members, elected by the membership, who assume direct charge of the association's affairs.

The common practice is to elect a buying committee, consisting of three experienced, capable horse breeders, from among the membership. The general meeting may express a desire as to the type of stallion desired or may leave the selection and buying to the committee.

Payment of a cash sum plus a fixed amount on condition of prizes won is the common method of buying stallions in Denmark. This conditional money is paid over a period of years, as the stallion wins the different prizes at the shows. If the stallions win all the scheduled prizes, the buyer will eventually pay the seller the full amount of this conditional money. This seldom occurs. However, the seller of a good individual may expect to receive a part of this conditional money.

Two common methods are employed by the horse breeding associations to provide capital for buying the stallion: (1) Initial payment of a fixed sum is made by each member. This may constitute only half of the purchasing price of the stallion, and the balance is provided by loan through the bank or some individual. (2) A loan of the full purchase sum is secured from a bank. In all cases the members are jointly and severally responsible for any financial obligations incurred by the association. The breeding fees vary according to the class of the stallion. The best stallions always pay for themselves, while the poorer ones usually leave the association with a deficit. Each member may have one breeding privilege, and the remainder are sold at auction where preference is usually given to members.

The associations in the different provinces are usually federated. On the Jutland Peninsula, 225 horse-breeding associations have formed the Federated Jutland Horse-Breeding Association. This federation promotes and arranges for the classification judgings of stallions and mares; it conducts special horse courses for young men each year; it maintains a breed register, etc. The federation also employs a horse specialist, who devotes his full time to the interests of horse breeding in the Jutland Province.

### SWINE AND SHEEP BREEDING ASSOCIATIONS.

Association work with pigs and sheep has been developed to some degree. The first pig-breeding association was formed in 1894. There has been no official survey since 1912 when the grants were withdrawn, but the last official survey in 1911 gave the number of such associations as 240. Through their close work with the pig-breeding centers (see page 34), the pig-breeding associations have done creditable work in placing the best type of sires with the average farmer.

## AGRICULTURAL CREDIT.

Cooperative credit in Danish agriculture has reached its highest development in the associations which provide long-term mortgage credit. These credit associations are well adapted to the needs of Danish farmers and have served the agricultural industry satisfactorily for nearly 75 years. Facilities for meeting the farmers' personal credit needs have been developed to a less degree along cooperative lines and only in recent years; but the Danish farmer's returns from his cows, pigs, and chickens come regularly once or twice each month throughout the year, whereas the American crop farmer has seasonal farm returns. In other words, the Danish type of agriculture in itself provides an important part of the operating capital.

### CREDIT ASSOCIATIONS.

Since the abolition of serfdom in Denmark at the close of the eighteenth century, the national policy has been to make the farmers proprietors of the soil. Not only has a gradual disintegration of large estate holdings been the policy as well as the trend during the last 125 years; but, in this parceling out of large land holdings, the aim has been to develop a farm population of self-owners on small and medium-size farms. The Danish system of long-term mortgage credit supplied through credit associations, has aided greatly in making Denmark a nation of farm proprietors.

Among the earlier farm land-credit schemes was the "Credit Institution" (*Kreditkasse*)[59] established by the Government in 1786, to aid the peasants toward farm proprietorship, by granting long-term loans at low interest rates. This operated with a fair degree of success until 1816, when it was discontinued as a result of the war-time financial crisis of 1807–1818. No sooner had the agricultural crisis of 1818–1823 (which followed the financial crisis) disappeared than serious attention was again given to new farm land mortgage-credit facilities. This directed their attention to the credit associations in Germany operating along cooperative lines. A Danish economist, A. F. Bergscöe, who had studied the credit associations in Germany (Prussian *Landschaften*), became an energetic advocate of a similar cooperative credit scheme among Danish farm owners. As a result of his writings and discussions at large agricultural meetings, a special committee on credit was appointed in 1845. On June 20, 1850, the Danish Parliament enacted a law,[60] which forms

[59] Larsen, O. H., Landbrugets Historie og Statistik. 1921, p. 238.
[60] Lov om oprettelse of Kreditforeninger og Loanekasser for Grundejere, Landbrugs Ministeriet, Copenhagen.

the basis for providing long-term mortgage-credit facilities through credit associations in Denmark.

The Danish credit associations are a modified type of the Prussian "*Landschaften.*" They are not regular banking institutions, nor do they supply members with personal credit. The association is nonprofit and voluntary, and the membership consists of borrowers seeking individual loans against first mortgages on their real estate. The association brings together the borrower with real property as security, who seeks a long-term loan at low rates, and the lender who seeks a safe investment yielding a fair return. As regards the creditors, all risk is practically eliminated, because of the association's solidarity through the principle of joint liability.

No person becomes a member in a credit association until he has received a loan from an association against the first mortgage [61] of his real property. According to the Danish law of 1850, the farm-land loans granted by a credit association can not exceed 60 per cent of the amount at which the property is valued. The loans granted usually do not exceed 50 per cent of the value.

The loans granted by the credit associations bear a low rate of interest and run for a term of 45 to 60 years. The borrower pays the association a fixed semiyearly installment and this covers the interest and repays the principal, on the amortization plan, during the term of the loan. Such loans can not be canceled so long as the borrower pays his regular semiyearly installments. For instance, on the most popular type, the 4½ per cent bonds, the borrower will pay 5 per cent on the orginal loan; after the interest on the bonds is cared for, the remainder goes to redeem the bonds, to defray administrative expenditures and to form a small reserve fund to care for any possible losses in each series. This reserve fund is returned to the members in that series when their loans are liquidated.

The loans are granted to the borrower in the form of credit association bonds, which may be disposed of readily on the Copenhagen Stock Exchange or privately. Daily quotations on the stock exchange record the market facilities for such bonds. The interest rate ranges from 3½ to 4½ per cent; the 4½ per cent bond is the most common type. The interest is paid to the creditor by the credit association. The credit association issues these bonds in series and the members within each series are mutually liable for all mortgages within that particular series. Each series closes when its total capital amounts to at least 10,000,000 kroner ($2,680,000 at par).

The Danish Government gives no financial support or guaranty to the credit association; but, in accordance with the law of 1850, all credit association bonds enjoy exemption from taxation (stamp duty exemption). Government supervision gives the credit associations a degree of stability which inspires confidence among bond purchasers.

The credit association is governed by a democratic membership control. Only borrowers become members. Only the members have voting privileges, except in one association where the creditors may also vote. The association's territory is divided into district units. Members in each district elect one representative, and these form the

[61] A law of 1897 provides for the formation of second-mortgage "Hypothekforeningerne" associations. There are three of these associations dealing in farm-land properties, whose aggregate loans March 31, 1922, totaled 55,273,000 kroner ($11,651,548 at exchange as of that date).

board of representatives, which controls the management of the association and appoints an executive board of three directors, one of whom must possess a legal and another an agricultural training. Each district unit elects three appraisers, for a term of three years, to appraise the property of loan seekers in their district.

A loan seeker must himself be farming the land on which he borrows. He first submits to the local appraiser his application with complete information and documents concerning his property. Two of the local appraisers are then obligated, within 14 days, to examine the property personally and appraise it. The application, together with the appraisers' report, is delivered to the district's representative, who forwards it to the association. Final decision on the amount of the loan and membership is made by the executive board of the association.

Immediately following the credit law of 1850, the first credit association was formed, in 1851, by farm owners on the Jutland Peninsula, and the same year another association was formed on the Island of Sjaelland. By 1880 there were seven credit associations engaged solely in farm-mortgage business, and these are all doing a sound, substantial business to-day. As a rule, these credit associations restrict their business to a certain area. They operate independently, and their business activities are in no way centralized. In fact, it is the policy for each association to lend only on property holdings of a uniform type. Special legislation later extended similar credit-association facilities to town and city property owners, and separate credit associations were formed which specialize in town and city properties; but in each case the loan must meet the requirements specified by law.

As existing credit associations did not satisfactorily provide for the credit needs of the small-farm proprietors, additional credit legislation was enacted in 1880 to provide for the formation of small-holders' credit associations, of which there are now two, one on the islands and one on the peninsula. In organization and operation they are similar to the credit associations previously mentioned, except that loans granted can not exceed 50 per cent of the valuation and repayment is usually based on the 45-year amortization plan. The loans are smaller and the bonds issued by the small-holder credit associations are guaranteed by the State. This State guarantee was found advisable to avoid low quotation of these bonds on the market, and has made these bonds very attractive, especially to foreign capital. As a result, they are usually quoted slightly higher than other land bonds bearing a similar rate of interest.

There are now 13 credit associations in Denmark providing long-term credit on first mortgages. Loans through these credit associations have grown steadily until they have become the most important form of long-term credit in the country. At the end of March, 1921,[62] these 13 credit associations had outstanding 277,767 loans whose aggregate value was 2,705,168,000 kroner ($490,987,992 at exchange as of that date). This represented more than half of the total long-term first-mortgage credit utilized by the Danish farmers. The soundness with which the associations operate, and the high degree of care exerted in fixing the valuations on which the loans are based,

[62] Statistisk Aarbog 1923, p. 120.

were well demonstrated during the agricultural depression in 1921–22. During this difficult year the aggregate losses on mortgage properties taken over by the 13 associations amounted to only 35,000 kroner ($6,655).

### SAVINGS INSTITUTIONS.

The savings institutions of Denmark engage in mortgage loans, but the bulk of their business is personal credit. They supply an important part of the farmer's personal-credit requirements. The first savings institution (*Sparekasse*) was established in 1810 on Holsteinborg Estate.[63] In 1921[64] there were 496 savings institutions in Denmark and 392 of these were located in the rural districts. On March 31, 1921, these institutions had 1,533,286 deposit accounts, whose aggregate deposits totaled 1,516,842,919 kroner ($275,306,990 at exchange as of that date). The fact that these local institutions were established in the agricultural districts, before the development of the modern private banks, partly explains why the latter are not so widely established in the Danish agricultural villages as in this country.

While the savings institutions are under Government supervision, each is purely a voluntary community undertaking, established by private enterprise. Only a minimum margin is charged on all money transactions to cover expenditures incurred—any profits are placed in a reserve fund. The savings institution is therefore a self-supporting institution, rather than a cooperative enterprise. It provides a community exchange where local people may deposit their savings, and these savings in turn may be loaned to others in the same community.

These savings institutions usually pay about 4½ per cent interest on savings deposits, and in turn grant loans with this money at 5 per cent, charging just enough to cover expenses incurred in making such transactions. The affairs of the smaller rural savings institutions are managed by the members at minimum cost. A teacher, farmer, or village merchant usually performs the principal clerical and official work at his home or place of business, with a small remuneration for his services. These savings institutions have played an important rôle in furnishing loans to cooperative associations for building cooperative creameries and bacon plants.

### LOAN ASSOCIATIONS.

In 1898 a scheme to provide short-term loans was created by State legislation, whereby the State provided 5,000,000 kroner ($1,340,000 at par) at a low interest rate, which could be loaned to farmers through local agricultural loan associations (*Landökonomiske Forskudsforeninger*). These loan associations could then provide small loans for buying seeds, fertilizer, feeds, etc., at low interest rates for a period not to exceed nine months, against livestock security. While many of these loan associations served an urgent need during the first decade of this century, the plan failed to become permanent. Aside from meeting this need, the Government policy was to encourage the plan with the aid of State loans, until the loan asso-

[63] Larson, O. H. Landbrugets Historie og Statistik, 1921, p. 240.
[64] Statistik Aarbog, 1923, p. 106.

ciations could finance themselves independently on their own accumulated reserves. This was possible in only a few cases, and when the State loans were recalled in 1908–1916, most of these loan associations were discontinued.

### COOPERATIVE RURAL BANKS.

The Cooperative Rural Bank (*Andelskasse*) is a more recent institution, organized in 1915. This is a local cooperative banking institution, which gives its members a complete banking service. Each bank restricts its business activities to its own locality and is independent of similar banks in other communities. Its members are bound jointly for the association's liabilities. It may accept deposits from nonmembers, but can grant loans only to its members. These cooperative banks have met with substantial success and now number about 150. The majority of these cooperative rural banks have purchased shares in the Danish Cooperative Bank at Copenhagen, which gives them good banking connections for loans and deposits.

### THE DANISH COOPERATIVE BANK.

The Danish Cooperative Bank at Copenhagen is one of the younger cooperative enterprises in Denmark, having been started in 1914. That no cooperative banking institution developed among the cooperative associations at an earlier date may be attributed largely to the liberal financial support which the savings institutions have extended to the local cooperative associations. In building the first cooperative creameries and bacon plants in different sections of the country, it was common to obtain a loan from the local savings institution. However, the need among cooperators for their own banking institutions was felt for years. The history of Danish cooperation reveals many difficulties experienced by the farmers in financing a new cooperative enterprise, especially large associations. The limited capacity of the savings institutions often prevented them from supplying the larger amounts of capital required by the larger central cooperative organizations. Frequently, where a new, large, cooperative enterprise was to be financed the private banks lent money with great reluctance and demanded unreasonable security.

The need for a cooperative banking institution was strongly advocated by the cooperative leaders at the close of the last century. Besides an available supply of money, the larger cooperative associations would also benefit by the earnings of their large banking transactions, when conducted through their own cooperative banking institution, it was argued. In 1906, a committee was appointed by the central cooperative committee to work out a definite plan for the proposed bank. In 1908, plans for the formation and operation of a cooperative bank were agreed upon, and, to insure a sufficient volume of capital and business before the bank was started, the various cooperative associations were solicited to subscribe for capital stock. The financial difficulties involved in providing necessary operating capital for the new cooperative cement factory hastened the establishment of a cooperative bank.

The Danish Cooperative Bank was opened in Aarhus, October 7, 1914, but since 1918 the main bank has been located in Copenhagen,

where it occupies its own building (fig. 22.). It is a capital-stock association and is incorporated under the Danish State corporation laws. The institution engages in all phases of banking business, besides financing of the cooperative associations, to serve the needs of which, as well as the whole agricultural industry, the central bank has established 48 branch banks and 59 offices scattered throughout the Kingdom. Besides winning the foremost place among the leading banks in Denmark, the cooperative bank is the nation's clearing house for the financing of all agricultural exports. At present about 75 per cent of the foreign money for Denmark's agricultural exports comes through this bank.

At the close of the year 1922 the Danish Cooperative Bank had a share capital of 15,689,700 kroner, equivalent at prevailing exchange

FIG. 22.—The building owned and occupied by the Danish Cooperative Bank, Copenhagen. The capital stock is owned by the various coperative associations in the country.

to $3,283,854, and a reserve of 1,000,000 kroner ($209,300) (Table 16). The capital stock is owned by various kinds of cooperative associations, cooperative rural banks, savings institutions, agricultural societies, and private individuals. Two-thirds, or $2,148,068, of the capital stock is held by 1,698 different cooperative associations and savings institutions.[65]

These are grouped as follows: 30 large central cooperative associations, whose share capital in the cooperative bank amounts to $532,899; 402 cooperative creameries, whose aggregate shares total $523,627; and 24 cooperative bacon plants, which own shares totaling $353,801. The largest group of cooperative associations is the group of cooperative consumers' stores, comprising 750 consumers' associations, which hold shares amounting to $388,105. Other associations of various kinds to the number of 492 own shares amounting to $349,636. Furthermore, one-third of the capital stock, $1,135,786, is subscribed by 22,194 individuals. This list of individual share-

[65]Beretning om Den Danske Andelsbank's Virksomhed i Tidsrummet 1 January–31 December, 1922.

holders includes some private business firms, but the bulk are farmers who are also members of the cooperative associations.

TABLE 16.—*Danish Cooperative Bank.*[1]

| Year beginning January 1. | Capital stock. | Reserve funds. | Volume of business. (000 omitted) | Year beginning January 1. | Capital stock. | Reserve funds. | Volume of business. (000 omitted) |
|---|---|---|---|---|---|---|---|
| 1915 | [2] $364,714 | (2) | [2] $234,882 | 1919 | 2,531,974 | 345,150 | 1,856,298 |
| 1916 | 637,412 | $55,560 | 950,875 | 1920 | 2,129,431 | 312,600 | 1,643,366 |
| 1917 | 1,488,460 | 91,543 | 1,605,457 | 1921 | 2,675,268 | 533,400 | 2,057,072 |
| 1918 | 2,132,550 | 210,000 | 1,670,679 | 1922 | 3,283,854 | 209,300 | 2,721,536 |

[1] Sources: *Beretning om Den Danske Andelsbanks Virksomhed i Tidsrummet 1 January–31 December, 1922—8 Regnskabsaar, 1922.*
[2] Conversions throughout at prevailing average rates of exchange as quoted by Federal Reserve Board.

Voting privileges are extended only to members (shareholders) who have actually done business with the bank that year. Delegates elected by such shareholders form the general assembly, which constitutes the highest authority in the bank's affairs. These delegates are elected on the basis of one delegate for each 50,000 kroner ($10,465) share capital, but the individual shareholders can at no time elect more than half as many delegates as the association shareholders. Accordingly, the control of the bank will always be with the cooperative associations. The general assembly elects a committee of 20 representatives (chosen in respective districts) which, in turn, elects the board of directors. The managing directors chosen by this board to direct the banking business must be approved by the committee of representatives.

The surplus earnings during the fiscal year, after providing for interest on capital stock, depreciation funds, and at least 25 per cent for reserve fund, are returned to those shareholders who have transacted business at the bank.

The Danish Cooperative Bank has attained this startling growth and success during its first eight years, which embrace the war period inflation and the depression of the last two years, with agriculture as its foundation. It is probable that a new bank under similar conditions, but established on industry and commerce in Denmark, would have told a different story, especially with the industrial crisis in Denmark's industries, which has resulted in big losses to banking institutions. Probably the cooperative bank was particularly fortunate in being started during the prosperous war times, when money was plentiful with the farmers. It was equally fortunate during the depression period, that its foundation was agriculture (which due to its high organization in Denmark has weathered the depression in fair shape); for when an industrial or trading enterprise fails it usually involves enormous losses, while if a farmer fails it usually involves only a comparatively small sum.

## MISCELLANEOUS COOPERATIVE ORGANIZATIONS.

Denmark has a large group of voluntary cooperative insurance societies of all kinds: Life, farm employers' liability risks, hail, storm, livestock, etc. In the rural districts there are a large number

of cooperative electric light and power plants and cooperative bakeries, two cooperative potato-meal factories and six local potato-marketing associations.

### CENTRAL COOPERATIVE COUNCIL.

Each group of cooperatives (creameries, butter export associations, bacon factories, purchasing associations of various kinds, etc.) have formed federations for general service purposes. As early as 1898 these federations worked together through a Central Cooperative Council (*Andelsudvalget*). This cooperative effort in the interest of the whole cooperative movement resulted in the formation of the central organization, the Federated Danish Cooperative Association (*De Samvirkende Danske Andelsselskaber*), in 1917. Its membership now comprises 16 cooperative federations and large cooperative enterprises such as the Danish Cooperative Bank. Its activities are directed by the Central Cooperative Council, whose membership is composed of representatives from the respective cooperative federations. Anders Nielsen, *Svejstrup Ostergaard*, the most active and prominent leader in Danish agricultural cooperation during the last two decades, is chairman of this committee. The cooperative associations jointly publish their own weekly cooperative journal (*Andelsbladet*) under the direction of the central cooperative committee.

After due allowance is made for other factors, the result of agricultural cooperation in Denmark has been twofold: (1) Standardized, high-quality agricultural products have become a fundamental basis for efficient distribution through more direct marketing channels with costs reduced to a minimum; and (2) a rational adjustment has been made in farm production to meet better the consumers' demand in the modern markets. This cooperative organization, so successfully developed by the Danish farmers, rests fundamentally on a correct training in rural life. The Danish system of rural education [66] supplies this unique training in scientific agriculture and rural citizenship. Her enlightened farm people, trained to rely on their own capacities, enable Denmark to pursue this rational policy in farm economics and progress in rural life.

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[66] U. S. Bureau of Education, Bulletin 1914, Nos. 22 and 24, and Bulletin 1913, No. 58, by H. W. Foght.

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